JOURNAL

OF THE

United States Cavalry Association.

VOL. XVII. JULY, 1906. No. 61.

"TEAM-WORK" IN WAR.*

BY MAJOR GEORGE O. SQUIER, SIGNAL CORPS, U. S. ARMY, ASSISTANT COMMANDANT OF THE U. S. SIGNAL SCHOOL.

L'union fait la force.

THE underlying cause of the Russian defeat by the Japanese in the recent war was irresistible "team-work."

The Japanese infantry soldier was no better, their artillery matériel and their cavalry were inferior, the numbers engaged were approximately the same; yet from the beginning to the end of the conflict the Japanese were successful. Never before in the world's history has there been seen a gigantic team of forty millions of people bending every effort so completely to one common purpose at one given time. From the Emperor of Japan to the lowest coolie in the rice paddies at home, each did his part, great or small, to defeat Russia. On the one side were organization and combination of effort, while on the other were disorder, lack of harmony and intrigue.

The principle of "team-work," when applied to guide

*Abstract of a lecture delivered at the U. S. Signal School, Fort Leavenworth, Kansas.

human endeavor, is the paramount discovery of the present century. It is the principle which has made it possible for the Standard Oil corporation in a minimum time to plan a campaign and defeat its enemies in any part of the world. It is the principle which enables the citizen to travel in comfort and safety from Chicago to San Francisco, a distance of 2,000 miles, in less than three days. It is the principle which has concentrated at San Francisco, after the recent appalling earthquake disaster, unprecedented assistance and succor of all kinds. In fact, it is this industrial discovery which has placed the United States ahead of the world in material progress.

* * *

The one unchanging factor in warfare is the individual physical strength of a man. The soldiers of Cæsar's army were physically no stronger nor weaker than our own. Progress in the art of war, therefore, consists in the realization of certain fundamental conceptions from time to time, and the seizure of one idea at a time, working it out in detail, and applying it before an enemy realizes its importance. These fundamental ideas have been slow to impress themselves upon military leaders, and, therefore, that nation which first takes hold of a new fundamental principle in war, and works it out with the greatest perfection in time of peace, possesses an insuperable advantage when suddenly the conflict is precipitated.

Frederick the Great inherited an army which had been trained in peace, and he soon found that he could march all around his enemies and strike them where he pleased. Napoleon, for the first time, grasped the importance of the relation between the ground and the battle, and developed this single idea until the French nation led the world in war. The electric telegraph was then unknown, but it is not too much to say that if there had been on duty with Napoleon's army at Waterloo a single trained company of signal troops, such as is now at the U. S. Signal School, the history of modern Europe would probably have been different.

The strictly modern art of war began with the campaign

of Metz and Sedan in 1870. The greatest of the fundamental ideas introduced in the art of war at that time concerned the mobilization and accurate assembling of great armies upon the field of battle. The army of the North German Confederation in the peace establishment numbered 12,000 officers, 285,000 men and 73,000 horses. The order to mobilize was telegraphed on July 16. Between July 23 and 25 the army was increased to 22,000 officers, 932,000 men and 193,000 horses, ready for war. The mobilization having been completed in eight to ten days, in eight to ten days more a force of nearly half a million of men and 1,200 guns, with first and second lines of trains complete, was assembled on a line of about ninety miles from Treves to Germersheim waiting for the order to advance. This result was effected by using railroad facilities to an extent unknown before.

With the increased accuracy and range of military weapons and the great size of modern armies, a modern line of battle, as at Mukden, may extend a hundred miles or more, and involve a terrane with widely varied military features.

The most fundamental truths are usually learned from the simplest experiments. Did not the falling of an apple give us the great law of gravitation?

A modern battle may be likened in many respects to that of a foot ball game on a grand scale, in which the various elements of an army correspond to the individual players of the team. The end players correspond to the cavalry on the flanks; the center, guards and tackles to the infantry and artillery of the front line; and the half-backs and full-back, to the supports and reserve, ready to be thrown into the line at a weak point. Offense and defense depend upon which side has the ball.

GENERAL RULES OF THE GAME.

1. "Team-work" with individual intelligence and aggressiveness is necessary to success.

2. Individual excellence without "team-work" is absolutely certain to fail.

3. The whole object is to secure a team in which no

one man shows out as a star; because if one man is a star the machine is imperfect, and is weak as a whole.

4. The object of the team, on both offense and defense, is to move so quickly that the opponent will be met in his own territory and not on neutral ground.

5. Any trick in which more than one man of the eleven is used for deception alone, is discarded.

6. The offensive team starts its game by trying its different methods of attack, and the different points of the opponent's line. As soon as a weak point is found it is hammered successively, with the object of destroying completely the weak individual or individuals who protect that point. This point is continually hammered in general, but other plays must be used enough to prevent its being a certainty, before each play, that the weak point will be attacked.

7. It is a fundamental rule that every play must be as simple in execution as possible.

8. The plays should be so chosen by the team captain, that every play is a surprise and is strong enough to prevent loss of ground if the surprise fails.

9. In the selection of plays every play is discarded in which each man does not have a definite part to perform.

* * *

The above rules of football which were furnished by one of the leading authorities of the game in the United States emphasize a fundamental truth, illustrated by a simple example familiar to all. They apply in principle, almost without change, to the conduct of modern battle. The dominant feature throughout is the necessity for the development of "team-work" to its highest efficiency in order to win the game. The analogy is not without its convincing lesson.

It is not, therefore, the efficiency of the separate arms of the service which measures the strength of an army; it is their complete coöperation and mutual support; or more definitely, the strength of an army is measured not by the number of men it contains, but by the number of rifles and guns it can put into effective action at any one time.

It is a significant fact to note in this connection, that during the entire Civil War there was never a battle in which there were more than 20,000 men engaged on either side at any one time.

Electricity is a messenger which travels at a rate of over seven times around our earth in one single second of time, and is therefore practically instantaneous for any distance involved in war, whereas any other available messenger requires not only an appreciable time to travel one mile, but of necessity requires twice that time to accomplish two miles.

It must be evident then that the only way to attain that perfection of control of the different units of an army which success demands, is through electrical lines of information which follow all the movements of the elements of an army and enable the commander-in-chief to operate his entire force at all times, with the same precision he would attain were he directing the movements upon a map before him. In short, it must be possible for the commander-in chief of an army, surrounded by his expert staff, to remain in his tent, and from the map before him play the game of war over a front of a hundred miles with the overwhelming force of perfect "team-work." He need not, and best should not, be distracted from his great responsibilities by the excitement incident to proximity to the actual combat. The only hope of securing this is by the development and use of electrical lines of information by highly trained signal troops in number far exceeding that authorized at present for any army in the world. This service must be insured at any cost, since it is the service that welds the whole army into one massive team, capable of being handled by one central intelligence to carry out a definite plan at a definite time.

The professional task before the army at present, is to apply to the utmost the principle of combination of effort to a single purpose in the shortest possible time; in short, it is the attainment of the complete coöperation of the different arms. In general terms, the army which can effect this co-operation to the highest degree, other things being equal, will win in war.

During the past few years we have devoted money, energy and skill to the efficient development of electrical means of *fire-control* for our coast artillery, and more recently to applying the same principles to field artillery, but the professional problem of the present is that of complete fire-control for an army in the field.

Military strategy is impossible to-day, and always has been impossible, without the possession of information of your own situation, that of the enemy, or of both, which is not possessed by your opponent.

The United States now has the three arms of the service, each of which compares favorably with the same arm in any other army. We have efficient regulations for the training of each of these arms separately, but we have as yet reached no full appreciation of the results to be attained by the complete coöperation and support of the different arms of the military service operated as a gigantic *war-team.*

THE GUN SLING.

By Captain R. R. RAYMOND, Corps of Engineers.

THE purpose of this paper is to throw a little light upon the uses of a gun sling. There has been some little controversy concerning the relative values of the old long sling and the new short one; but the chief arguments appear to be, on the one hand, that the new sling cannot be used as an aid to aiming, and on the other hand, that it can be so used. Perhaps a study of the facts in the case may prove more profitable than the above line of argument.

The uses of the sling are two: To aid in carrying the piece and to aid in aiming. As everyone knows and admits that the sling does assist in carrying the piece, we need not trouble ourselves to prove it; but the value of the sling in aiming is not so well understood. Indeed, the writer, who has for several years been thrown into close contact with many officers and men on the target range, has frequently been amazed by the general ignorance on this subject. As we are to deal with facts only, the writer may be pardoned if he takes a few from his own personal experience. Having fired the complete marksman's course, both with and without the sling, he finds in his own individual case that the sling increases his efficiency as follows: Slow fire, standing, ten per cent.; sitting, ten per cent.; prone, sixteen per cent.; rapid fire, standing, five per cent.; sitting, four per cent.; skirmish fire, twenty per cent.; entire course, sixteen per cent.

The *lowest* score of ten shots he ever made at five hundred yards with the sling was four per cent. higher than the *best* he ever made without the sling.

In 1904, his company, firing without slings, qualified three marksmen, two of whom were later classified as sharpshooters.

In 1905, the same company, firing the same weapon with the sling, qualified twenty-seven marksmen, of whom twenty-one qualified as sharpshooters; and of these, five qualified as expert riflemen. Other changes of method assisted in this improvement, which practically doubled the company's individual figure of merit, but the sling is entitled to a large share of the credit.

These *facts*, considered in connection with the opinions and actual experiences of numerous officers well qualified to pass judgment in the matter, convince the writer that the sling *is* an aid to aiming.

Further than this, he is convinced that *a proper use of the sling will increase the efficiency of the weapon more than any improvement likely to be made now in the weapon itself or in its ballistics.*

Inasmuch as men in action must fire while in a state of intense excitement, and occasionally immediately after great physical exertion, the increase of efficiency due to the steadying of the piece by the sling must assume far greater importance than it can ever possess on the instruction range.

One cannot behold the facts above without admitting the value of the sling as an aid to aiming; but right here is where many officers fall into the error that makes horrible the present controversy over the relative value of the two types of sling which have been issued to our army. It is not the mere presence of the sling upon the rifle, nor yet its use as permitted by the present regulations, that makes for increased efficiency. It is the *proper use* of the sling.

What is the proper use of the sling? For carrying the piece a single strap of suitable length, attached to the two swivels, is the simplest and best device. Both types of sling are entirely satisfactory when adjusted for carrying, but the writer tried the experiment of timing two officers in making the necessary adjustment, and obtained the following result: Old sling three minutes and fifteen seconds, new sling twenty seconds. In this respect the new sling is a great improvement over the old one.

Many arrangements of the sling have been used to improve steadiness of aim. Some men release the sling from

the rear swivel and place the foot upon the strap as it lies upon the ground. Others simply slacken the strap and pass it around the leg. Others pass it around the body, and still others use it in various forms attached to the arm. All of the different methods possess some virtue, but when it is considered that any one adjustment, in order to be of value in action, must be equally efficacious standing, kneeling, sitting and prone, all of these same methods fail, with the one exception of that in which the sling forms a loop attached to the front swivel and passing around the arm. After careful tests, the writer feels safe in asserting that this loop is so much better than any of the other methods, that its use should be required instead of being prevented by regulation. Let us look a little more closely into the principle of the loop The butt of the piece is held against the shoulder, and is as steady as the body itself. Nothing can be gained at this point by the use of the sling, and it is therefore entirely unnecessary to use the rear swivel except for carrying the piece.

It is the muzzle that must be steadied. As a purely mechanical proposition it cannot be denied that the proper procedure is to attach a guy to the piece at a convenient point, and attach the other end of the guy to some steady part of the body. It is also well known that a triangle is the only rigid geometrical figure. If we attach a loop to the front swivel and then pass the arm through this loop so as to bring the loop right up to the shoulder, we shall have the sling, the piece and the shoulders forming a very favorable triangle for the standing aim. Either the half arm or the body rest may be used.

The same argument of the sling is valuable in the kneeling position.

In the sitting position, with the elbows resting on the knees, the body and limbs are so disposed as to form a tripod resting upon the seat and the two feet; and this tripod with one exception, is composed of rigid triangles. Thus: Ground, left lower leg and left thigh; ground, right lower leg and right thigh; left thigh, body and left upper arm; right thigh, body and right upper arm; right upper arm, right forearm

and stock of piece. The exception is the quadrilateral formed by the left forearm, left upper arm, body and piece. The sling supplies the necessary diagonal and makes the whole frame rigid. For this purpose it should be pushed well up to the shoulder, but may also be used at the elbow, although in this latter position it is not quite so effective, as the quadrilateral still lacks a diagonal.

Some very successful shots do not use the sling in the sitting position because they find the frame formed by the body and limbs fairly good without it; but those who have given it a fair trial find that it stiffens the whole and affords great assistance in holding the piece during the manipulation of rapid fire. By referring to the figures of increased efficiency above, it will be noticed that the gain is less for the sitting than for the standing and prone positions, but it should also be noted that the gain is nevertheless positive.



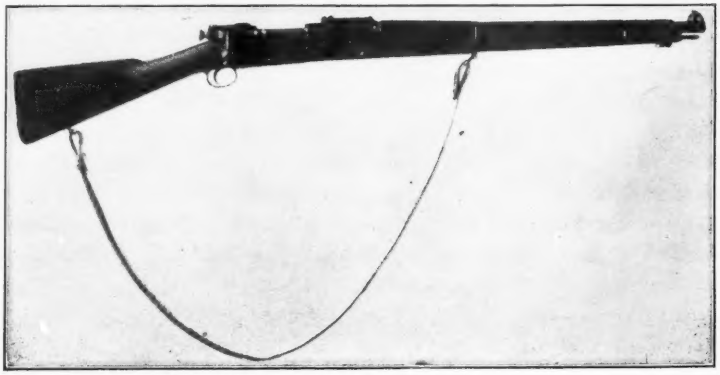
THE PARADE POSITION.

It is in the prone position that the sling loop reaches its greatest value. The right shoulder is braced by the body and right upper arm, and the body is braced by the left upper arm. Thus the shoulder, and consequently the butt of the piece are steady. The piece is also steadied by the two props afforded by the forearms, and even without the sling, is fairly firm; but the left wrist is not rigid, and the right hand holds the piece too far from the muzzle to be really effective. Therefore the sling loop, slipped well down to the elbow immovable on the solid ground, becomes necessary. It enables the left hand to bear with firmer pressure against the piece, and forms a guy which prevents sidewise vibrations. A good prone position with a properly adjusted loop is nearly equal to a muzzle rest.

The same length of loop serves for all positions, provided

that it be independent of the rear swivel; and it should be independent of that swivel, for the butt is the one part of the gun which needs no support from the sling for steadiness in aiming.

Now to return to the two types of sling, we find that the old sling lends itself to adjustment in a satisfactory loop. The new sling used according to regulations is useless to form such a loop. The nearest approach to it is secured by letting out a great deal of slack and then taking a turn around the left upper arm, so that the sling passes from front swivel to the arm, around the arm with a complete turn, and thence to the rear swivel. The length of the strap



THE CARRYING POSITION.

from front swivel to arm should be the same in all positions, but the length from arm to butt must vary. Adjustment of length is therefore necessary for every change of position; and as such adjustment is too difficult to be made in action the new sling therefore fails to perform satisfactorily its most important function. It has been claimed for it that it *can* be used to assist the aim. This is true, but it can *not* be used in the best and most efficient way. This alone is sufficient to condemn it decisively.

We have already seen that the old sling is inconvenient and clumsy when it has to be adjusted for carrying the

piece. It is equally, if not more so, when adjusted for use in firing.

Let us reduce the problem to its simplest terms, and see what the result will be. The sling must be capable of assuming three separate positions, in each of which it should be secure and strong. It should also be capable of passing rapidly and easily from any position to any another. These positions are the normal or parade position, the carrying position and the firing position.

A satisfactory solution of the problem demands that the strap may be stretched tightly between the swivels for



THE FIRING POSITION.

parade; that it may be attached to both swivels and be adjustable in length between them for carrying, and that it may be attached to the front swivel as a loop adjustable in length for firing.

The accompanying photographs show a sling designed on these principles. It consists of a strap securely attached at one end to the front swivel. The other end is passed through the butt swivel and secured by a simple clasp which locks or slides at will upon the strap. By sliding this clasp as near to the front swivel as possible all slack is taken up. Behold the parade position. By sliding the clasp toward the butt

swivel, any amount of slack, limited only by the total length of strap, is obtained. This operation is readily performed in five seconds. Behold the carrying position.

By detaching the end of the strap from the clasp, drawing it entirely out of the butt swivel and passing it again through the clasp and to any desired position, a loop of proper form and length for the most efficient aid to aiming is produced in seven seconds. Behold the firing position.

The clasp locks positively and is composed of only three pieces of metal. The home-made experimental clasp was fashioned from scraps, yet even in this crude form the sling has won the praise of all who have examined it.

It is not claimed that this sling is the best possible to design. It was made simply to test the ideas advanced in this paper. It is absolutely free from the serious defects which the slings already issued possess in such generous profusion.

There surely can be no excuse for issuing a worse sling than the best available, and neither sling already issued is anywhere near the best obtainable.

BETTER MARKSMANSHIP.

By First Lieutenant C. A. BACH, Seventh Cavalry.

"THIS war has burned into my mind as nothing else could have done that the condition of our army constitutes a terrible danger to the existence of our empire. I have learned here that nothing but the very best will do."

When General Ian Hamilton of the British army made this statement, as the result of his experience gained in the Russo-Japanese War, he gave voice to the fear that tugs at the heart-strings of every conscientious military commander. We must have the best of everything; the best of equipment, of supply, of transportation, of armament, of formation; and above all, the best of training for our soldiers.

The army is divided into two parts: the part that plans and the part that executes. Both are inter-dependent. Alone, neither could accomplish results. Just as the arms execute the mandates of the brain, so the army executes the orders of its leaders. But when strategy has played its part and armies have been maneuvered in the theatre of war so that finally they stand face to face, it is the man who decides the fate of battle. The brunt of the struggle, the attack, the assault, the final victory or defeat, rest with the private soldier.

Since we have become a nation our proudest boast has been that the American soldier, because of his superior intelligence, is the best soldier in the world. But the quality of the man alone is not enough. He must be trained to his work. Not only this, but he must be so well trained that he represents the best. This is our ambition; nothing short of this is completely satisfactory.

The efficiency of an army is represented by the individual training of its soldiers. With the perfection of the modern small arm and the consequent necessary abandonment of

mass action, individual efficiency, initiative and intelligent aggressiveness constitute the dominant factors that will be decisive in future warfare.

In larger actions fire control by officers is gradually lost as the distance between combatants decreases; and the soldier at approximately 800 yards, if not sooner, is deprived of the support and control of his superiors just at the time when he stands most in need of direction and encouragement. Who at this critical period is the best soldier? Who at this time will display the greatest coolness, the most self reliance, the greatest aggressiveness? It is the soldier who has confidence in himself; the soldier who, despising the poor marksmanship of his antagonist, keeps his head and makes his fire tell. It is the soldier who knows that he can hit what he shoots at.

There is no need to emphasize the importance of good shooting. Its necessity is such that it appeals to the intelligence of every thinking officer. In garrison, in time of peace, this qualification is lost sight of to some degree, but in action it looms gigantic, overshadowing every other requisite. The ability of the soldier to shoot well is vital to the success of an army in battle.

Years ago, when hardy spirits first populated our Western wilds, every man was a sharpshooter, and even the women were accustomed to the use of the rifle. Conditions were responsible for and made necessary this proficiency in arms. And conditions to-day are equally responsible for the ignorance of the great mass of the American people in this respect. Our safety has been our undoing. The average American of to-day has so little familiarity and skill with the rifle as to make our high sounding phrase, "the Americans are a nation of riflemen," no more than a bitter sarcasm. Our army is recruited from such men. And the army, like the American people, has been forced to recede from the proud position it once claimed of being the best collective body of shots in the world. A careful study of results will show that, since 1894, army marksmanship has steadily deteriorated. There are many causes for this deplorable result. The change, in 1895, from the Springfield to the Magazine rifle, with which no

one was acquainted; the constant movement of troops between posts in this country and between this country and the Philippine Islands; the large number of other interests demanding attention; and lastly, the insufficiency of ammunition, all tended to hamper good marksmanship. In 1898 the allowance per man for ammunition for target practice was $4.50, an amount that was entirely inadequate. This was raised in 1901 to $9.00 per man. In 1902 the allowance was fixed at 250 rounds per man, and this was increased in 1903 to 400 rounds.*

However, it is not causes that concern us, it is remedies. How can we better the shooting of our soldiers? I say by a compliance with these four points:

1. Greater proficiency and interest of troop officers.
2. A range at every post.
3. The use of as much ammunition for practice as is necessary.
4. Increased pay to riflemen, graduated according to qualification.

GREATER PROFICIENCY AND INTEREST OF TROOP OFFICERS.

If I wished to study astronomy I would not consult a blacksmith. The man who aims to perfect himself in corporation law will not select as his tutor a tailor. The youth who wishes to become an artist chooses as his instructor an artist of acknowledged reputation. If you were looking for a man to direct and guide you in any walk of life or in any department of science or art, you would choose that man above all others who has demonstrated that he can himself do the thing you desire to learn. That man can best teach who, not alone by theoretical study but by practical demonstration and actual doing, has qualified himself to occupy the position This is equally true of shooting. The officer who can shoot well is a better instructor than the officer who cannot. He knows of his own personal knowledge and experience the details of wind, mirage, atmosphere, temperature, light, gun barrels, and the adjustment of sights for various conditions. He has the confidence of the men because

*For 1906 the allowance amounts to 360 rounds.

they know that when he makes a statement he speaks as one having authority; because they know that he can "make good." In this matter of shooting, the soldier is in the position of the man from Missouri. You must show him. And the officer who can not do that, can not expect that his advice and directions will have much weight with his men. Even though his instructions be perfectly correct, the soldier, after having in accordance with orders made some change in adjustment and, through a personal error, missed the target, will inevitably say to himself, "Well, he doesn't know as much about it as I do," and change his adjustment. You say this is a lack of discipline? I don't agree with you. It is simply human nature. No man desires to receive instruction from a man less capable than himself. An officer desirous of becoming an expert rifleman would not consent to be instructed by another officer who is a third class man. No more, then, is it fair to force upon an enlisted man an instructor less capable than himself.

And this ability to shoot well lies within the power of every officer, with few exceptions. Dr. W. G. Hudson, an acknowledged authority on rifle shooting, says: "There are certain individuals who seem to have born in them a special aptitude for accurate work with the rifle, and who require little training or instruction to grasp the whole subject and keep in trim. These of course will naturally progress much faster than what one may term the average person. Then there are others who seem never to be able to shoot well, no matter how hard they try to learn. But the great majority belong to the intermediate class, and any of them can learn, with perseverance and well-directed practice, to become at least fair shots."

No officer can inspire his men unless his heart is in his work. On the other hand a well directed zeal seldom fails to bring results. That troop or company will shoot best, even under somewhat adverse conditions, whose officers are enthusiastic and interested in the subject of rifle firing. But this interest to be effective, must be a personal and living one. It must extend from the captain, through the lieutenants, to the lowest ranking non-commissioned officer. It

must manifest itself in a personal and sympathetic supervision of and a close individual attention to all the details of preliminary sighting drills and gallery and range firing. It cannot flag without a corresponding reaction on the part of the enlisted men. It may be irksome at times but the officer can rest assured that the results will richly repay the effort; not alone in the satisfaction that comes to every man from the knowledge of a duty well performed, nor yet in the increased efficiency and fighting value of his command, but in the assured belief that in developing a good shot he has developed a good soldier. For a good shot is usually a good soldier. The knowledge of his greater proficiency generates a sense of superiority over his fellows and develops an added self-respect that tends to hold him aloof from many of the temptations that beset enlisted men. A troop commander, in raising the marksmanship of his command, raises its morale.

A RANGE AT EVERY POST.

In tables showing the comparative proficiency attained at different posts in the United States in rifle and carbine firing, for the year 1903, we note one significant fact. Of the first sixteen posts mentioned in these tables, fourteen had rifle ranges at the post.

There is only one way in which a good shot can be developed: by intelligently directed and constant practice. This practice should be held under all the varying conditions of light, wind, weather, temperature and atmosphere. The soldier who finally graduates as a good shot from such a systematic course of instruction can shoot well anywhere, at any time, and under almost any conditions; and in time of battle the confidence that his proficiency gives him is worth pounds of lead to his commanding officer. But such instruction is not possible except the post and the range be very near each other.

The writer of this article has in mind the difficulties experienced by his own regiment in developing good shots. During the seasons of 1903 and 1905 the target practice was held at a range about 120 miles from the post. The time consumed in marching to and from the range was two weeks.

One month was allowed each squadron for range firing. Deducting Sundays and rainy days, approximately twenty working days remained for the four troops. Twenty days in which to teach recruits how to shoot, and develop older men to a greater expertness. Twenty days out of 365 to instruct men in the most important and essential qualification of a soldier.

I venture to say that there are few posts in the United States near which, within a radius of ten miles, ground for a suitable rifle range cannot be found. And at such posts, where, because of proximity to a city or from other causes, the extent of ground necessary for an open range cannot be obtained, protected or safety ranges in which, by means of screens and prepared ground, erratic shots can be controlled, could be constructed at a minimum of cost.

The immense advantages to the general marksmanship of the army derived from the establishment, at each post, of a suitable rifle range are easily apparent. Sighting and aiming drills and all theoretical instruction, and even gallery practice, could be conducted during the winter months, and in the spring, as soon as the weather would permit, range firing could begin. In this way from four to five months of actual range practice each year could be obtained, to terminate in the latter part of August or early September with the various competitions.

THE USE OF AS MUCH AMMUNITION FOR PRACTICE AS IS NECESSARY.

In order to conduct such an extended program of range firing it might be found necessary to increase the amount of ammunition allowed for this purpose. But if the men are impressed by their troop officers with the necessity of saving empty shells, such an increase would not be a great one. However, under no circumstances should the development in marksmanship of a soldier be hampered or retarded because of the expenditure of a few additional rounds of ammunition. Such restrictions would be penny wise and pound foolish.

INCREASED PAY TO RIFLEMEN, GRADUATED ACCORDING TO QUALIFICATION.

Increased pay for marksmanship, graduated according to qualification, would powerfully stimulate the interest of enlisted men and bring out the best of which every man is capable. It may be argued, because enlisted men are in the employ of the government, that the government is by this fact, entitled to their best efforts. Theoretically this is correct. Practically it fails to work out. The monthly pay of the soldier is not such a princely sum as to draw within the folds of the army a class of men who could be appealed to solely on ethical and moral grounds. In no way is the average man reached so successfully as through the medium of his pocket-book. Personal opinion, political and even religious convictions, are strained to the breaking point by such an appeal. The soldier is human. He is susceptible to human influences.

In the ordinary business affairs of civil life, the better workman receives the higher wages. Why should not this principle, with equal justice, be applied to the army? Nobody questions the fact that, other things being equal, the better marksman is the more valuable soldier. Then, if that be true, why not acknowledge the fact in such a substantial and potent manner as to impress the soldier with the desirability of being a good shot?

In the year 1903 this army of 67,000 men produced only 58 expert riflemen, 349 sharpshooters and 500 marksmen. A little more than one-fiftieth, about two per cent., of the entire field strength of our army qualified as marksmen or better—a pitifully small percentage.

Should each marksman receive fifty cents, each sharpshooter $1.00, and each expert rifleman $2.00 additional per month, the entire added amount would, for 1903, be only $715.00 per month or $8,580.00 per year. This is a small sum to give an army as both a stimulus and a reward for extra exertion. There is no doubt, however, that if such an increase of pay were allowed, this sum would be doubled, perhaps trebled, in the course of two years. And it would be money well spent.

In connection with this subject of better marksmanship it might not be inappropriate to invite attention to a few changes that could advantageously be made in our present small arms firing regulations.

1. In order to secure the best results in skirmish firing, it is essential that the skirmishers should know exactly the proper elevation and the amount of drift of the bullet fired at the various ranges. This can be accurately determined only by actual firing. Under the present course these is no instruction practice at 350 and 400 yards, but the soldier is required to fire at these ranges in making a skirmish run. I would suggest, therefore, that two scores, slow fire, at each 350 and 400 yards, be added to the instruction practice, marksman's course, but not to the record practice.

2. In rapid fire, unfired cartridges count as misses. In skirmish, for each unfired cartridge at a given range, five points are deducted from the score. Five points are also deducted for each shot fired after the signal "cease firing." There is no provision or ruling in the Firing Regulations to prevent the skirmisher who finds himself at "cease firing," with an unfired cartridge on his hands, from taking careful and deliberate aim and scoring on the prone figure. He has fired a cartridge after the signal "cease firing," and is penalized five points—which he has just made. On the other hand should he fail to fire the cartridge he loses the five points he might make with that cartridge and is penalized five additional points; a total penalty of ten in case he does not fire, and of five in case he does. For the above reason I believe that the same ruling that governs in rapid fire should prevail in skirmish, *i. e.*, each unfired cartridge to count as a miss.

3. Skirmish firing is the most important individual firing done on the range. It approximates war conditions most nearly. If the number of skirmish runs, instruction practice, were increased to four, it would materially aid in steadying the soldier and raising his average. While it is true that troop commanders may of their own accord conduct additional skirmish runs, in actual practice it is not frequently done on ranges that are used by more than one or-

ganization, because the necessity for haste is perpetually emphasized. If, however, four instruction skirmish runs were prescribed, it would insure the additional practice.

In all sports or enterprises that are wholly or partially competitive in their nature, the spirit of emulation develops, frequently to an extreme. Army rifle shooting is not free from this. While many safeguards have been devised to insure the absolute accuracy and reliability of target records, they will all fail of their object unless troop officers indicate to their men, in a manner not to be misunderstood, that nothing short of perfect honesty will be tolerated. Such an example will be more effective in eliminating "jockeying" than any other means that could be adopted.

No man can estimate distances, with absolute accuracy, at long range. They can only be approximated. And if, by persistent practice, any man had so perfected himself as to judge distances with a considerable degree of exactitude, he would find his estimates utterly valueless under different conditions of atmosphere and weather. This inaccuracy in estimating distances is so great as to neutralize, in a large measure, the advantages to be derived from the modern magazine rifle with its flat trajectory and increased range. A small portable range finder, issued one to each troop and company, after first being duly tested and approved, would solve the problem.*

If the government, by establishing a suitable rifle range at every post, will offer the opportunity for men to perfect themselves in shooting, allow sufficient ammunition for this purpose, give increased pay for increased skill and efficiency, and furnish a range finder to accurately determine distances, I feel safe in saying that the army will do the rest. Good marksmanship is our mightiest safeguard. The rifleman is the bulwark of the nation.

*See infra (page 30) a proposed system of range finding for infantry and cavalry.

SMALL ARMS FIRING AT UNKNOWN DISTANCES.

By Major H. L. RIPLEY, Eighth Cavalry (General Staff).

THE following exercise took place at Fort Sill, O. T., in June, 1905. Previous to the exercise, the commanding officer had located the position for the enemy (target) and had determined the positions that would probably be taken to solve the problem. From the nature of the country and the conditions given, there was practically but one solution to it.

The enemy was represented by a line of sixteen "E" targets at about a yard interval, supported by a second line of "D" targets, some fifty yards in rear and on higher ground, and at a yard interval. It was assumed that these thirty-two silhouettes represented a delaying detachment or rear guard of a force which the cavalry were pursuing. The position taken by the enemy was a strong one, on the foot-hills of the mountains, with an open country in front to the east for some two miles, where the approaching cavalry could be plainly seen. Although the hills were more or less wooded, for convenience a place had been selected for the target which was partially open and where the figures could be plainly seen after they were once "picked up."

Two troops of the Eighth Cavalry, under the command of Captain F. were taken out some four miles west of the post, and upon arrival at a certain point he was informed by the commanding officer that he had been fired upon from the front and had suffered several casualties among his men and horses and that he was still under fire. Although no enemy had been seen, the troops were quickly moved at a gallop by the flank and placed under cover in a wooded ravine. Careful search by the officers with field glasses soon discovered the enemy. The problem then was to dislodge him and drive him away.

The cavalry had been fired upon at a distance of approximately two thousand yards. This distance was known only to the commanding officer. Examination of the ground showed that a position some three hundred yards in advance of the point where they had been fired upon could be obtained by going up a small swale from where the horses were. This position was at once occupied by one troop dismounted, and under conditions of the problem no farther advance could be made to the front without heavy loss.

On the right flank, however, high hills extended from near where the horses were, well up to the left flank of the enemy's position. By going back of these hills, completely sheltered, until a point was reached nearly flanking the enemy, a position could be gained which commanded him, and being thus gained would render his position untenable and he would have to retire.

It was estimated by the commanding officer that such a flank position would be about one thousand yards from the enemy, and the character of the country and the conditions of the problem, precluded getting any nearer. Captain F. sent one troop, mounted, back of these hills to obtain such a position, occupy it dismounted and open fire. In the meantime the troop in front practiced on the enemy with a few select shots and several volleys, trying to get the range, but the target being on a rocky knoll and the distance so great, no indication in the way of dust could be obtained, and it could only be approximately estimated. The flank troop having gained its position and opened fire, the troop in front began firing, and this firing was continued by both troops until their ammunition was used up. Each troop had been provided with twenty ball cartridges per man. Recall was then sounded and the exercise closed.

When the troops were assembled, an examination of the ammunition showed that in the engagement the two troops together had fired fourteen hundred and thirty-two rounds. Examination of the targets showed that eleven hits had been made, and from their position it was estimated that the enemy had suffered a loss of four killed and seven wounded. Not quite ·0077 per cent. of hits to shots fired.

The next day the other two troops of the squadron, under the command of Captain D., were taken to the same point and given the same problem. The solution was identical with that of the previous day, but with a slightly different result. Out of twelve hundred and ninety-five rounds fired, twenty hits were made, estimated as before, at twelve killed and eight wounded. About .0158 per cent. of hits to shots fired.

In both cases it was apparent that the enemy was driven from his position, but it had taken the cavalry an hour and a half to do it. Taking the whole squadron, the average per cent. of hits to shots fired was .0118, and yet these were good shooting troops, which had just completed a target season on the range and each had attained a general figure of merit of over seventy.

The problem was a simple one. The conditions (not attainable except at a very few posts) approached about as near actual hostilities as it is possible to have them. It was a long range fight, as most fights are in these days; ball cartridges were used and distances were unknown. The first intimation the troops had of the immediate presence of the enemy was the information that they were being fired upon. The only things lacking to have made it real, were the actual receipt of the volley with its attendant casualties and the invisibility of the enemy. The invisibility in this case could, and in actual warfare would, have been made practically complete. The enemy would have done his work just as well, suffered less loss, and it would have taken a much longer time to have driven him away. It is safe to say that in actual warfare the percentage of hits to shots fired would have been reduced at least one half or more.

The vast difference between results obtained when the firing is over known distances and when it is over distances which are unknown, is strikingly illustrated in this exercise and emphasizes the necessity for some sort of a range finder, in the hands of troops, which will be fairly accurate.*

*See infra (page 30) a proposed system of range finding for infantry and cavalry.

A PROPOSED SYSTEM OF RANGE FINDING FOR INFANTRY AND CAVALRY.

By Lieutenant F. WHARTON GRIFFIN, Artillery Corps.

THE range finders in use by the U. S. army to-day are unsatisfactory with the exception of those used by the coast artillery. In recent years numerous experiments have been made with the range finders of foreign make, such as the Zeiss stereoscopic binocular range finder and the Forbes telemeter, but these also have proved unsatisfactory.

The essentials of a good range finder are that it should be accurate, easily carried in the field, a short time and few men required to obtain the range, and of course the less complicated the parts of the range finder and the method of obtaining the range the better. It is easier to find short ranges with accuracy than long ones with all range finders, and for this reason this system is proposed for use by the infantry and cavalry, and if it should be tried and any one of the methods proves to be satisfactory a similar method will be presented for trial by the field artillery.

The best range finder for troops in the field now in use is the Weldon. This range finder is used by the field artillery, and in theory it is sufficiently accurate, but unless it is in the hands of a well trained man it is very inaccurate, and even in the hands of a well trained man errors sometimes occur.

The principle by means of which the range is obtained in this proposed system is similar to the method employed by the Weldon, but the instruments (there are two of them used in conjunction) are entirely different.

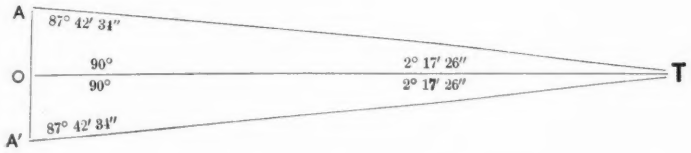
Before describing the proposed instruments a discussion of the principle will be given. An attempt has been made to eliminate all the errors that are liable to occur when using the Weldon and to make the instruments almost as accu-

rate when used by untrained men (but men who understand the principle) as it is when used by trained men.

FIRST METHOD.

This method depends upon the solution of one side of a right angle triangle; the angles of the triangle always being constant and hence the two adjacent sides of the 90° angle are in proportion.

The natural tangent of 87° 42′ 34″ is 25. Therefore in all right angle triangles containing an angle measuring 87° 42′ 34″ the sides adjacent to the 90° angle are in proportion of one to twenty-five.



It will be seen in the figure if O represents the point from which the range is to be obtained and T represents the target, that if a 90° angle be measured at O, and the point A be found where the angle between A T and A O equals 87° 42′ 34″, the side T O is 25 times as long as the side O A.

The proposed instruments to be used to obtain the range consist of two instruments that will measure the 90° and the 87° 42′ 34″ angles, and a tape line from which the range can be read at once, *i. e.*, without having to multiply the distance A O by 25.

The instruments to be used to consist of rigid cross sights mounted on pointed staffs. One of these instruments to have the sights permanently fixed at right angles and similar to the surveyor's cross. The surveyor's cross sights would not be the best sights for range finding, and in their place I would suggest two metal wedge-shaped sights. The front sight the same as the rear sight.

The other instrument to have one sight at an angle of 87° 42′ 34″ to the other, and the same kind of sights described for the first instrument. These instruments to be

detachable from their staffs and provided with the ball and socket movement similar to the Jacob's staff. The sights to be carried in leather cases swung over the shoulder.

If the staff of the 90° instrument be made several feet shorter than the staff of the instrument containing the 87° 42′ 34″ angle and one of the sights of the 90° instrument be telescopic and provided with stadia wires, ranges can be read directly by having the graduation on the staff of the 87° 42′ 34″ instrument read 25 for one.

If the stadia method be used, the cross arms of the ninety degree instrument should be provided with level tubes.

A time saving device for the 87° 42′ 34″ instrument would be a movable center similar to the transit, but having more play.

The dimensions of the instrument and the metal or combination of metals out of which they should be made will be determined later if this system is approved. The instruments in their leather cases will not be much larger than the cavalry sketching case.

The tape need not be over eighty yards long, for this length tape will measure a range of 2,000 yards, $80 \times 25 = 2000$. This tape might be self-winding on a reel in a box and the box provided with some arrangement to hold it in place, as a pin to be stuck in the ground.

It will be seen from the figure that the range can be found by laying off the right angle triangle either to the right or to the left of the line T O.

Two men are required to find the range, and for convenience I will call them No. 1 and No. 2.

No. 1 sets up the instrument which has the sights permanently fixed at right angles on the target. He then directs No. 2 on the line O A until he has found the point A with the other instrument, and the distance O A, measured by the tape gives the range. If the stadia be used the range is read as soon as the point A has been found, but unless O and A are on very nearly the same level the tape line would have to be used. If the right angle triangle is laid off to the right of the line T O No. 1 directs No. 2 along the line OA′

until he has found the point A′, and the range is found as before explained.

In order to prevent confusion on the part of No. 2 the sight which he is to point towards the target should be marked. It will be seen in the figure that this sight when used on the right of the point O is revolved 87° 42′ 34″ from the position that it is when used on the left of the point O. The sight to be used on the right should be marked R and the sight to be used on the left should be marked L. Then no confusion is possible.

Three men could find the range quicker than two. No. 3 goes with No. 2 and uses the target sight, while No. 2 uses the other.

When three men are used without the use of the stadia no staff is necessary for the 87° 42′ 34″ instrument, for the sights can then be used as a hand instrument.

SECOND METHOD.

Consist in using a permanent base and measuring the angle at the point A or A′. The instrument to be used at the point O to be the same as the one used in the previous method without telescopic sight or level tubes. The tape to be forty yards long. At the end of this tape the second instrument is to be set up. This instrument is similar to a small azimuth instrument, but mounted on a Jacob's staff and provided with the ball and socket movement and level tubes. It should also have a movable center. The sight need not be telescopic, but like the sights described in the first method. It should also be provided with a vernier, vernier clamp and vernier tangent screws. The instrument should be set up reading 0° 0′ 0″ and pointing at O and the angle T A O should be read.

This gives the range immediately if a range table has been prepared beforehand. The natural tangent of the angle multiplied by forty is the range. Thus if the angle be 87° 42′ 34″ its natural tangent is 25, and 25×40=1000 yards. The sights on this instrument should be very little above the venier plate in order to make the instrument as flat as possible.

THIRD METHOD.

The instruments used are the same as those used in the second method except that the 90° instrument should be provided with a telescope and stadia wires, and stadia graduations should be marked on the staff of the other instrument.

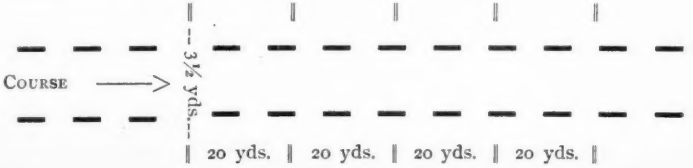
The range is found by means of a plotting board. A base is measured any convenient length and the angle read at the end of it. This base is measured on the plotting board and the angle plotted and the range read from the board.

SABER VERSUS REVOLVER VERSUS CARBINE.

By Lieutenant Colonel JAMES PARKER, Thirteenth Cavalry.

DURING the month of October, 1905, at Fort Riley, Kansas, a number of experiments were made in field firing. Among these were: First, a test of the comparative execution of pistol and saber, advancing mounted at full speed in a straight course, lined by a number of silhouette targets; Second, a test of the comparative accuracy of the pistol and carbine, circling the regulation riding track at a gallop, firing at silhouette targets. These tests, while not conclusive to any great degree, developed some facts which are of much interest. They were witnessed by all the officers of the cavalry subpost.

The test of the saber *versus* revolver was conducted by Captain W. H. McCornack, Ninth Cavalry. He selected ten men of average proficiency with the pistol and saber. These men had three preliminary drills of two hours each. The horses were average. The course was 117 yards long, which each trooper had to pass over at a rate of sixteen miles an hour. At each twenty yards along the course there was a silhouette of a soldier, standing, on the right side of the track, with another on the left side, the interval between the silhouettes being three and one-half yards. The silhouettes faced toward the starting point. That is, there were ten silhouettes of infantry, ranged in column of twos, the interval between men being three and one-half yards, the distance between twos being twenty yards. Down through the center of this column a trooper with pistol and saber rode at a charging pace. (See cut.)



The ten men made four runs each, with a pistol, in two runs firing to the right and in two runs firing to the left. They also made four runs with the saber, on the first run cutting to the right, on the second run thrusting to the right, on the third run cutting to the left, and on the fourth run thrusting to the left. The results are shown in the following table:

FORT RILEY, KANSAS, Nov. 7, 1905.

Record of pistol and saber test. Course straight away, 117⅓ yards. Targets 5 prs. of standing silhouettes (H) perpendicular to course; 20 yards between pairs; 3½ yards between targets of each pair.

	PISTOL. NO. OF HITS				SABER. NO. OF HITS			
	Right	Right	Left	Left	Cut to the Right	Point to the Right	Cut to the Left	Point to the Left
ORDER OF RUNS.....	1st	3d	5th	7th	2d	4th	6th	8th
Sergeant Finney.....	3	5	4	4	5	5	5	5
Sergeant Jackson	2	4	1	0	5	5	4	4
Sergeant Bledsoe	5	5	5	5	5	5	5	5
Sergeant Briggs	3	5	4	4	5	5	4	4
Corporal Sampson ...	3	2	1	4	5	5	5	5
Corporal Newton.....	3	2	2	3	4	4	5	4
Corporal Williams	4	4	4	3	5	5	5	4
Farrier Mulford.....	3	5	2	3	5	5	5	5
Private Wilson	3	4	5	4	5	4	3	5
Corporal Ringo	5	4	4	5	5	5	5	5
Total.....	34	40	32	35	49	48	46	46
Percentage	68	80	64	70	98	96	92	92
Per cent. for two runs	74		67*		97		92	
Per cent. for four runs	70.5				94.5			
Shortest time for 1 run	12 seconds				13 seconds			
Longest time for 1 run	15 seconds				15.5 seconds			
Average time of all runs	12.5 seconds				13.5 seconds			

Misfire counted as misses.

An examination of this table indicates the following facts:

There were 34 per cent. more hits with the saber than with the pistol.

The percentage of hits with the saber was much larger

than with the revolver, whether the saber was used to cut or to thrust, whether the target was on the left or on the right.

It should be noted that the troopers in this test had the alternative, if they desired, of placing the pistol *against the target* before discharging it.

Why more hits were not made with the pistol can be explained only by the fact that a horse at a run is a mighty unstable platform from which to shoot, aud it is much easier under such circumstances to hit an object with a saber than with a pistol; for proof of which I recommend that doubters practice this experiment next year. It only requires a few cartridges.

It will be noticed that the time of the run averaged less with the pistol. This is due to the difficulty of controlling the horse while shooting.

It is impossible to reproduce on a drill field the conditions of war. If it is necessary to solve the question of saber *versus* pistol, we must work it out by actual war experience, either in the past or in the future. This fact, however, would seem to be fairly well indicated by this experiment—that at the moment of collision between two masses of cavalry, the saber is a surer weapon as far as hits are concerned, than the pistol.

The second test of the pistol *versus* carbine was conducted by Captain Lanning Parsons, Ninth Cavalry. He selected ten ordinary pistol shots, with average horses, and put them through a short course in using the carbine mounted. Captain Parsons found that while in firing to the left the carbine can be used with best effect by aiming from the right shoulder, it was not possible to aim from the left shoulder in order to fire to the right. Supporting the butt of the weapon on the hip was tried and found very handy, but the men invariably fired too high. This defect, however, might have been cured by preliminary dismounted practice. The best results in firing to the right were obtained by holding the carbine in the right hand, just as a pistol is held, and extending the arm. This test was as follows:

With the targets selected of standing figures arranged as in Figure 1, Plate 28, Firing Regulations, the targets ten

yards from the track, five circlings of the track at a gallop for each soldier, firing five shots in each of the five directions, namely, to the right, left, right front, left front and right rear, or twenty-five shots in all. The results of these tests are shown in the following table:

REVOLVER PRACTICE

Names.	R	%	L.	%	R. F.	%	L. F.	%	R. R.	%	Total.	%
1st Sergt. McGhee	0 0 0 0 2	20	0 0 0 0 0	0	2 0 1 0 1	40	2 0 0 0 0	20	2 0 0 2 0	40	12	24
Sergt. Johnson.....	2 0 0 0 2	40	0 1 0 0 0	10	0 2 0 0 1	30	0 0 1 0 2	30	0 0 0 0 1	10	12	24
Corp'l Harcoumbe	0 2 2 0 2	60	1 0 0 2 0	30	2 0 0 2 0	40	0 0 0 2 0	20	2 0 0 0 1	30	18	36
Corp'l Hipsher.....	0 0 1 0 0	10	0 2 2 0 0	40	1 0 0 0 1	20	0 0 0 1 0	10	0 0 2 0 0	20	10	20
Corp'l Johnson.....	0 0 0 0 2	20	0 1 0 2 2	50	1 2 1 0 0	40	2 0 0 0 0	20	1 1 0 0 2	0	17	34
Private Benton	0 0 0 2 0	20	0 2 0 0 0	20	1 0 0 1 2	40	0 0 0 0 0	0	2 0 0 0 2	40	12	24
Private Gaines.....	0 0 0 0 1	10	0 0 0 0 0	0	0 0 0 0 0	0	2 0 0 0 0	20	0 0 0 2 2	40	7	14
Private Hampton	0 0 0 1 0	10	0 0 0 0 0	0	0 0 0 0 0	0	0 0 0 0 0	0	1 0 0 0 0	10	2	4
Private Johnson, D....	2 2 0 2 0	60	0 0 0 0 0	0	0 2 0 2 1	50	2 1 2 0 0	50	0 0 0 1 1	20	18	36
Private Clark	0 0 0 0 2	20	0 0 0 0 0	0	0 0 0 0 0	0	1 0 0 0 0	10	0 0 0 0 0	0	3	6
		27		15		26		18		25	111	222

CARBINE PRACTICE.

Names.	R	%	L.	%	R. F.	%	L. F.	%	R. R.	%	Total Points.	%
1st Sergt. McGhee	0 0 0 0 0	0	0 0 0 0 1	10	0 0 1 0 1	20	2 0 0 0 2	40	0 0 0 0 1	10	8	16
Sergt. Johnson.....	0 0 0 2 0	20	2 0 0 1 0	30	0 0 0 0 0	0	0 0 0 1 0	10	0 1 0 2 1	40	10	20
Corp'l Harcoumbe	0 0 0 2 0	20	2 0 0 2 1	50	0 1 0 2 0	30	2 0 0 0 0	20	2 1 0 0 1	40	16	32
Corp'l Hipsher.....	0 2 2 0 0	40	0 2 0 0 0	20	0 0 0 1 1	20	0 0 0 0 0	0	0 0 0 c 2	20	10	20
Corp'l Johnson.....	0 0 0 2 1	30	0 0 2 2 0	40	0 0 0 2 0	20	0 0 0 0 1	10	0 2 0 0 0	20	12	24
Private Benton	2 0 2 2 2	80	0 1 0 0 2	30	2 1 2 2 0	70	0 0 0 1 0	10	0 0 2 0 0	20	21	42
Private Gaines.....	0 1 0 0 0	10	0 0 1 0 1	20	0 0 0 0 0	0	0 0 0 0 0	0	0 2 0 0 0	20	5	10
Private Hampton	0 0 0 0 0	0	0 2 0 2 2	60	1 1 0 0 2	40	0 1 1 1 1	40	2 2 0 0 2	60	20	40
Private Johnson, D ..	0 0 0 1 0 0	10	0 0 0 2 0	20	0 0 2 0 0	20	0 1 1 0 2	40	2 2 0 1 0	50	14	28
Private Clark	0 2 0 0 0	20	1 0 0 2 2	50	0 0 0 0 0	0	2 0 0 0 0	20	0 2 0 0 0	20	11	22
		23		33		22		19		30	127	254

Total miss fires—Revolver 15.
Total miss fires—Carbine 17.

This table shows: First, the total score of the carbine was sixteen per cent. greater than the total score of the pistol (this superiority was even greater and more uniform during the preliminary instruction); second, the carbine score was fifty-seven per cent. better than the pistol score, shooting to the left and left front; third, the carbine score was practically equal to the pistol score, shooting to the right.

The result of this test, like that of the first, was a surprise. This test raises the questions: First, to how great a degree the carbine can replace the pistol; second, whether the carbine is not an efficient reserve of the pistol, to be used when the pistol has been emptied; third, whether carbine practice mounted should not be taught, in order to take advantage of its possibilities.

In considering these questions, we must remember that, while the pistol is more handy than the carbine, and can be discharged more rapidly, it cannot be reloaded with the same facility as the carbine. Our new carbine, using the clip, can be reloaded almost by a single movement. The Colts 38 caliber revolver has to be reloaded by laboriously inserting the cartridges one by one; the Luger pistol is unsafe in the hands of the ordinary soldier.

One great difficulty about our revolver is the fact that its shots are exhausted immediately and it is practically impossible to reload in action. The writer was, on one occasion, for what seemed to be three or more minutes, riding through a body of Philippine insurgents drawn up in column along a road. In the first twenty seconds all his five revolver cartridges were fired. After that he could only rely on the "moral effect" of pointing at each man an empty pistol. To try to reload would have been fatal. The two men who accompanied him were in the same fix, and neither one thought of drawing his carbine, for neither had been instructed to make use of the carbine when the pistol was empty.

It seems strange that this use of the carbine in place of or as a reserve to the pistol has not been more discussed by those who favor the use of projectile weapons on horseback; for it must be remembered that in the magazine carbine we

have now a weapon which, for use from the saddle, is vastly superior to the old single-loader.

Let us suppose that projectile weapons were desirable in a charge, and that two detachments of cavalry, equal in other respects, charge each other in line of foragers, one armed with the pistol, the other with the carbine. In what degree would the pistol have the advantage? Let it be remembered that the men with the carbine would naturally shoot to the left front, and would, therefore, if these experiments have any value, have a large advantage over the pistol. Also, that they could reload more easily. Also, that the appearance at close quarters of the muzzle of a carbine is decidedly more formidable than that of the muzzle of a pistol. And, further, that the wound of the carbine is more deadly to man and beast.

The experiments may afford some matter for thought to those who favor the use of the pistol, when mounted, to the exclusion of all other weapons. As for me, I believe the great utility of cavalry lies in its readiness for any emergency. In my opinion, for each of these weapons, carbine, saber and pistol, there are emergencies for which it is best suited. The weight of the saber or the pistol is inconsiderable. It is not too much to ask of a soldier to be able to use effectively, mounted, all of these three weapons.

REVOLVER VERSUS SABER—REPORT OF THE CAVALRY BOARD.

EXTRACT FROM MEMORANDUM REPORT (No. 26) OF THIRD DIVISION, GENERAL STAFF.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF STAFF.

WASHINGTON, February 27, 1905.

* * * * * * *

"(*c*). The arming of each trooper in a selected regiment of cavalry with three or four revolvers and the careful training of the regiment in revolver firing, with a view to making a practical test of the expediency of substituting the revolver for the saber."

* * * * * * * *

Official copy respectfully referred to the Cavalry Board, Fort Riley, Kansas, for report.

The question as stated is not, it is believed, sufficiently to the point.

The Board is not advised, as it should be, to assume the saber sharpened, effective as a cutting and pointing instrument, troops properly instructed in its use, conditions possible and expected to prevail; and under such assumptions the board should report whether or not the saber is of such little value as to justify its abandonment as an arm of the cavalry soldier.

(Sgd.) CHAFFEE,
Lieutenant General,
Chief of Staff.

With reference to the above recommendation of the Third Division, General Staff, the board is of the opinion:

1. That the practical test proposed can not be made in any way so as to be conclusive, except on the field of battle.

(*a*) While time lacks for citing authorities, it is known that many instances occurred during the Civil War when cavalry armed with pistols fought cavalry armed with the saber. The pistol was a revolver little inferior to the revolver of to-day for practical purposes, for it carried a heavier ball, and, while it was loaded with a paper cartridge, it is a well established fact that in the mêlée the pistol can seldom be reloaded, whether it fires metallic cartridges or not, and thus the advantage of the present ammunition is not so great as appears at first sight. The saber thus used was often not sharpened. While there may have been troops skilled in the use of the pistol on the one side, there were, apparently, few troops expert in the use of the saber, on the other. Under these circumstances, it would appear that, as a result of these combats, there was testimony claiming the superiority of the pistol, and there was testimony, equally strong, in favor of the saber. It is understood that there was no testimony of importance condemning the carrying of both arms on the ground that one was superfluous; and it is also understood that there were several instances where Confederate cavalry commanders asked that their troops, armed with the revolver, be given the saber in addition. As one of these instances, may be mentioned General Early, who, after his defeat in the valley, complained bitterly of the disadvantages he was under through not having his troops armed with the saber.

(*b*) The pistol, in a charge against cavalry, must be fired to the front. Practice in firing to the front at a gallop, which can be regarded in some degree as a test of this kind of firing, was had in the United States army during the years 1889 and 1890. See reports of target practice for those years, G. O. No. 1, A. G. O. 1890, and G. O. No. 1, A. G. O. 1891. This practice, briefly, was as follows:

Four silhouettes, representing infantrymen, were placed in line, five yards apart. An equal number of troopers, five yards apart, in line, moved toward the silhouettes at a gallop. The pistols were loaded with five cartridges. Firing commenced at eighty yards, and each trooper invariably reserved one cartridge for the moment when he reached the

target assigned to him, often placing the muzzle of the pistol against the target as he fired the last shot. This practice demonstrated the following facts:

In shooting to the front, the muzzle of the pistol being near the horse's ear, many horses were made gun-shy and intractable.

To prevent troopers from shooting each other, it was necessary that exact line be maintained during the advance. To accomplish this, the advance was usually made at a very slow gallop, approaching a canter. In spite of all precautions, men and horses were sometimes shot. To this fact, and to the injury to the temper of the horse, was partly due the discontinuance of this class of pistol practice.

In spite of the fact that the last shot was fired at saber-length distance, or less, the percentage of hits in the ten regiments of cavalry was: In 1889, only 13.01; in 1890, only 16.63. That is, in the whole number less than one out of every five shots hit the target, since a score of twenty per cent. would have represented an average hit of one out of five.

It is probable that in most cases the hit was the last shot fired; the shots fired in the advance, while at a distance from the target, being as a rule misses. It is also probable that had the troopers been armed with the saber and the advance made under the same conditions, against a similar line of targets, the percentage of hits would have been as great, for it is not likely the average trooper would have missed hitting the target as he passed it. In the case of the saber, probably the casualties to men and horses from accident would have been small.

(*c*) The board is of the opinion that, no matter how carefully trained in the use of the pistol a body of cavalry may be, an attempt to test the effectiveness of the pistol by charging at a line of targets under conditions such as obtain in war, riding in line, boot to boot, at full speed, firing to the front, would be useless and so dangerous to men and horses as to be impracticable. A horse at full speed proceeds by a series of tremendous leaps. From such a platform, accuracy is impossible. The horse is held in ranks with difficulty. In this state of excitement, a pistol fired close to his ear will

often cause him to bolt, carrying his rider in front of a line of charging men, firing without accuracy and at random. Casualties would, under these circumstances, be most difficult to avoid.

In a real attack in battle, these conditions are still worse. The least courageous men will fall to the rear, and it is these men who will probably be the first to fire. The most courageous men will urge their horses to the front, and run the risk of being hit in the back by the cowards. The officers will be unable to ride in front, and the element of leadership and the resulting control will be absent.

2. It is further the opinion of the board that, no matter how many pistols be carried, and no matter how carefully the men are trained in the use of the pistol, the saber should be carried as well.

It is believed that the principal occasions in which cavalry may attack are as follows:

(*a*) Against infantry, when routed or worthless. In such a case, the pistol may be used, though history recites occasions without number when terrible slaughter has been caused by the saber under such circumstances. In this case, if attack were made by using the pistol, the saber would come into use when the pistols were emptied.

(*b*) Against artillery. For this attack, ordinarily made as foragers, riding against the flank of a battery, the pistol is probably the most desirable weapon, but the saber would come into use as a reserve when the pistols were emptied, and also to hamstring the horses and cut the traces.

(*c*) In partisan warfare, in making sudden attacks on small towns, villages, etc., stampeding the inhabitants, local guards, and police, the pistol is useful. The saber would then be carried as a reserve weapon, to be used in case of a counter attack of cavalry.

(*d*) In riot duty. Experience in this country, and more especially abroad, has shown that usually the most effective way of handling a mob is by the use of cavalry. Infantry, pressed upon by a mob, is in a difficult position. The infantryman is in danger of having his rifle wrenched from his grasp. When the disorder becomes great and an attack is

imminent, the only recourse of infantry under these circumstances is to fire, killing the innocent as well as the guilty. The cavalryman, on the other hand, is raised by his horse above the crowd, which is afraid of being trampled upon. The streets can be cleared with ease by charging the mob, using the flat or the edge of the saber. In this country, where the danger of mob rule is increasing with the crowding of cities and the spread of anarchistic doctrines, the saber should be retained as a cavalry weapon if for no other reason than the above.

(*e*) Against cavalry. When cavalry fighting is limited to small bodies of troops, such as squads and platoons, one against the other, and does not take place in a confined space, such as a narrow road or lane, the tendency of cavalry is to make the charge with intervals or as foragers. Under such circumstances, the pistol is a very useful weapon, although the saber should be carried as a reserve, to be used in the mêlée when the pistol is emptied. But, in the case of a charge in a confined space, or of a charge over open ground of large bodies of cavalry against each other, where there is no room for deployment, the contest is usually decided by the shock of men riding boot to boot at full speed against each other. In the mêlée which follows this collision, the troops are more or less jammed up against each other, horse against horse. In this mêlée a pistol, discharged at an enemy, may easily kill a friend, and, in any case, the pistol is no match at arm's length for a sharp sword. The pistol may hit five times; it is then useless. The saber, on the other hand, can strike an infinity of blows, and, if sharp, its wounds are terrible. Such combat will be decided by the most determined men and the strongest horses, and by the most skillful use of the sharpest saber.

"The charge is the decisive and most important and characteristic cavalry movement." The advance of modern armies is covered by a screen of cavalry. When such armies approach each other, the rôle of cavalry is, to attempt to pierce and beat down the screen of the enemy. This leads to great cavalry combats, taking place far in advance of the main body of the army. These combats must be decided

largely by shock action. No cavalry, not in a strong position, will dare to fight dismounted an enemy superior enough to operate on its flanks. The use of the pistol is incompatible with shock action. Shots fired while the horse is in motion are wasted, and it is impossible to make men withhold their fire until the collision. Further, the instincts of men armed with the sword are, to close; of men armed with the pistol, to hold an enemy at a distance. A regiment armed exclusively with the pistol might well adopt the tactics of receiving the enemy's charge at a halt, since at a halt accuracy of fire is possible, were it not that all experience shows that to receive a charge at a halt is disastrous.

Cavalry is an arm which depends upon opportunity. The emergency may call for the use of the carbine, of the saber, of the pistol; for mounted action, or for dismounted action. The opportunities are fleeting. The best cavalry is that which is prepared for any emergency. The saber weighs but little. History shows that, if sharp, it is, at close quarters, a most formidable weapon. The rôle of the pistol and the rôle of the saber are different; one cannot displace the other. The cavalry that is without the saber will be unable to take advantage of all the opportunities of a war.

The board is of the opinion that much of the prejudice against the saber is due to the fact that the saber generally in the hands of our troops is so dull as to be little more than a steel club. This saber, if sharpened and kept keen as a razor, becomes at once a formidable arm, a blow from which is sufficient to place an enemy out of action. In the opinion of the board, the sharp saber as a cavalry weapon is valuable and should not be abandoned.

(Signed) E. S. GODFREY,
Colonel 9th Cavalry, President.

A TRUE COPY.

JOHN W. WILEN,
1st Lieut. and Sqdn. Adjt. 13th Cavalry, Recorder.

This report and the convictions of the board are concurred in by the Chief of Staff.

Approved:
CHAFFEE.

A PLEA FOR PISTOL PRACTICE.

By First Lieutenant F. G. TURNER, Sixth Cavalry.

CONGRESS appropriates yearly large amounts for the encouragement and furthering of proficiency in rifle firing, both in the regular service and in the organized militia of the several States and Territories.

This appropriation covers supplies and repairs in large amounts for rifle ranges, and the construction of butts, pits, and firing points, to say nothing of the ammunition expended.

The government undoubtedly should endeavor that each and every citizen, liable to military service in case of emergency, should have, at least, a fair working knowledge of how to use the military rifle, and incidentally, the general principles of trajectory, line of fire, danger space, safety zone and the various forces that act upon a bullet from the instant of expulsion from the chamber of the rifle until its flight is arrested.

As an encouragement to this end, the National and the various State governments have established certain figures of merit, or percentages of the score possible to be attained, and have classified them under these heads, *i. e.:* "Expert Rifleman," "Sharpshooter," and "Marksman," with the result that all in the military service strive harder to become proficient, and are better satisfied with their records when the necessary score to qualify is attained than if not classified under one of these heads.

This is as it should be; but what has been done toward the encouragement of proficiency, in the arm furnished to a cavalryman or a soldier in the field artillery? Many officers of experience advocate the abolition of the saber, claiming that it is obsolete and that the pistol answers every purpose for which the saber can be used. Some go to the extent of

recommending that two pistols be issued to each trooper. Be this as it may, the fact remains that a trooper is issued a pistol, the use and need of which has been clearly demonstrated in the fact that there were numerous encounters at close quarters in the Russo-Japanese War. In our own service the pistol is not given the prominence it properly deserves, nor is the course of firing as a rule entered into with the amount of interest that should be shown. How many troopers can tell the direction of the rifling in the pistol barrel, and what effect this twist has upon the flight of a bullet?

The establishing of certain grades of proficiency in pistol firing would greatly encourage a soldier to do his best under all circumstances, and make him strive to attain the highest score possible. If classifications were to be assigned to the various grades, the individual records would be improved in proportion to the zeal and interest brought to bear upon the men by the troop or battery commander.

Proficiency in rifle firing is divided into several classes; a like grading for pistol firing would bring about an improvement in the shooting with that arm as has been marked in that of the rifle.

The only encouragement now extended for good shooting with the pistol is that the best shot may represent his organization at the division competition, while the other men are not classified, and there is nothing to show whether the soldier's record was second or last in his troop, other than the retained record of the pistol report.

The National Guard of the State of New York and Connecticut award decorations for pistol firing under the following conditions: New York, marksman's class, fire at target "A" for officers and enlisted men armed with the pistol, without rest or support of any kind for the weapon or arm.

1st, at 25 yards, five shots, minimum qualifying score	18
2d, at 50 yards, five shots, minimum qualifying score	16
3d, at 75 yards, five shots, minimum qualifying score	15
Aggregate	49

A score of 49, or 65⅓ per cent. or more, as above, will constitute a marksman's qualification.

All qualifying as marksmen receive the State decoration, one bar of which has a figure indicating the number of years that the recipient has qualified.

The question of the decoration for the higher grades of excellence in practice has been discussed, but as yet no official action has been taken in the matter.

In addition to this, Squadron "A," N. G. N. Y., Major Bridgeman, commanding, awards a decoration for armory practice to those who qualify with both pistol and carbine.

The opportunity is not given in this State to conduct mounted practice.

In Connecticut, dismounted pistol firing is conducted as in the regular service, the kinds of fire, ranges, and targets being identical, with the following qualifications:

A score of 60 per cent. to 69 per cent. inclusive, qualifies as marksman; a score of 70 per cent. to 79 per cent. inclusive, qualifies as sharpshooter; a score of 80 per cent. or better qualifies as expert.

To those qualifying in any of the foregoing classes, the State decoration is awarded.

It is suggested that a similar decoration be awarded by the government to keep up interest and friendly rivalry, and as an encouragement to proficiency to those in the regular service armed with the pistol.

Certain percentages might be established for mounted and dismounted practice combined; for instance, 70 per cent. sharpshooter, 60 per cent. marksman, and all who fail to attain a record of 40 per cent. in the dismounted course should shoot again in a supplementary season.

Bronze decorations of different designs, one for each class, similar to those made of silver and now issued to all who qualify as sharpshooter or marksman in the rifle firing, slightly modified, so to read "pistol mounted" on the bar, is suggested.

The service is sufficiently familiar with the significance of these insignia, and the word sharpshooter or marksman might be omitted without in any way causing any conflict or ambiguity as to their meaning.

The awarding of these insignia to those qualifying in

these two classes, would be but a small cost to the government and the expenditure would be slight compared with the benefit derived in the proficiency attained.

The allowance of pistol ammunition for the season 1904, of 200 rounds per man, was increased to 400 rounds for the season 1905. This allowance was for mounted and dismounted practice combined. As a result of this increase the following improvement in the record of one troop under my supervision is of interest:

	1904.	1905.
Mounted	17.89 per cent.	49.17 per cent.
Dismounted	56.72 per cent.	70.82 per cent.

Therein showing that the expenditure of the extra amount of ammunition was justifiable, in that the shooting was materially improved. This increase is probably to be found in the majority of troops completing the course in 1905.

The Firing Regulations, 1906, prescribe the following number of rounds to be fired in the mounted and dismounted courses: Mounted, instruction and record, 115 rounds per man; dismounted, instruction and record, 105 rounds per man. It will be noted that the authorized firing will take 220 rounds, whereas, but 200 rounds are allowed.

To accomplish this, the mounted firing in the instruction practice at ten and fifteen yards, is left to the discretion of the troop commander. The record firing, mounted, is at ten and fifteen yards; the compulsory instruction course is at five yards.

As a parallel case why not give the instruction course for rifle at 200 yards only, and then require the record to be fired at 500 and 600 yards? The inadequate supply of ammunition develops these conditions; troop commanders rarely, if ever, put a trooper over the ten and fifteen yard course in instruction practice. To do so would run ahead of the allowance, and the officer would be called upon to make good the excess; furthermore, the poor shots require more instruction practice than those who have attained a fair degree of proficiency, and in consequence, must take more than the prescribed minimum number of scores at the range where their deficiency is most marked. There

is no allowance or provision for this, and it is a problem of doing the best one can under the circumstances, with the reduced allowance of 200 rounds of ammunition per man.

This last difficulty can hardly be remedied by drawing carbine ball ammunition for the empty shells turned into the Frankfort Arsenal, and changing them for pistol ball, yet this is the only resource to which troop commanders may turn, provided it is desired to give the men the full benefit of the instruction course over the ranges prescribed by regulations.

To maintain the best interest of the service, by attaining the greatest degree of proficiency possible with the arm issued, and as an incentive to such, the awarding of badges would be of inestimable value.

THE FEDERATED MALAY STATES.*

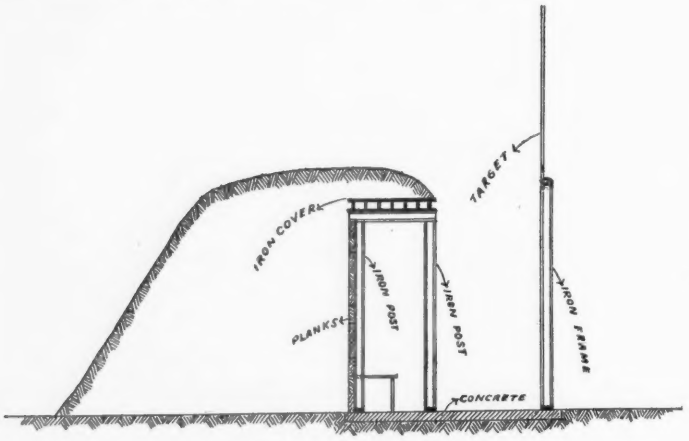
By Captain GEORGE T. LANGHORNE, Eleventh Cavalry,
A. D. C. to Major General Wood.

THE military force of the Federated Malay States consists of a regiment called the Malay States Guides, to which is attached an artillery corps. It is composed almost entirely of Sikhs and Pathans. The latter are sometimes spoken of as Mohammedan Sikhs, and do not wear beards. Both Sikhs and Pathans are splendid looking men, and their profession is soldiering. They are very submissive to discipline, careful and proud of all the forms and ceremonies They are said, however, to lack initiative, and although fight bravely when well led, still the moment they are deprived of their white leaders their value in a great measure is gone. The field and most of the company officers are those of lower grade from the British army. The lieutenant colonel commanding is a very energetic and active man, and one of great ability. The adjutant, Captain E. I. M. Barrett, of the Lancaster Fusiliers, is an especially energetic and capable officer. There are a number of native officers. The regiment is about a thousand strong, quartered as follows: Two companies at Kuala Lumpur, State of Selangor, and six companies and headquarters at Taiping, in the State of Perak. They are uniformed with the handsome turbans, and even their khaki uniform is striking. For dress occasions they have the British red coat. For the field their equipment is very simple. They use a khaki cloth haversack, which has the advantage of being cheap, and perhaps is durable enough for their service. They have for fatigue work a light blue flannel shirt without a collar and a handsome green turban. The British Resident of each of the four

*Extract from a report on Sarawak, Java and the Federated Malay States. The report was made from personal observation during a visit to these places.

native states has a guard furnished from this regiment, principally for display. The Sultan and many of the native chiefs are received with guards of honor whenever they visit the Resident or the state capital.

The target range at Taiping is one of the very best I have ever seen. The long distance firing is up to 1200 yards; the butts are against a mountain. This figure shows a cross section; the overhanging cover enables the space between the butt and the target to be small, thus preventing the loss of many good shots.



TARGET BUTT AT TAIPING, PERAK.

The targets were on an upright iron frame, and had vertical motion, working on chains over wheels at the top. These frames or stands permitted three sizes of targets to be used. The butt was floored with cement; the cover was upheld by iron posts and iron rails. Like everything else in the British and Dutch colonies, the targets and the butts were nicely painted or whitewashed. One of the main advantages of the range was that it approached service conditions, the jungle on either side, the rough ground, and shooting over a road which crosses the range at five hundred yards.

There were many disappearing targets very simply arranged, some on the open ground, some imitation men

behind breastworks or shelter, a gun with silhouette cannoneers, a track running across a portion of the range on which an imitation armored car with a gun and crew, offering fine moving target. Another target arrangement, representing a column of troops marching down a hill towards the shots, was suspended on a wire, and consisted of a number of groups of silhouette figures arranged as in a column of troops. There was a painted canvas on a frame, to represent the front of a house, with a window and a door which could be opened and shut presenting the figure of a soldier in the window and in the doorway. A very good simple moving target was the silhouette of a soldier creeping, with his gun carried about the knees. This was on a light frame about four feet square, and was carried on a pole like the signs which one sees carried about in the streets. A man carrying this moves up and down behind the butt. The target appearing above the latter makes a very good moving objective.

Captain Barrett and the soldiers were particularly good shots, especially those I saw, which were the best from each company practicing at competition targets for a match to be shot off in a few days between that garrison and the garrison at Singapore. Officers from each garrison were sent to the other to watch the firing of the competitors. The teams shot at the same hour on the appointed day at Taiping and Singapore, and the results were telegraphed. In addition to these matches they have regular competitions similar to ours.

In Singapore the troops are, a regiment of British infantry, one of Madras infantry (native soldiers from India), and artillery, both British and native. These serve a tour in Singapore of so many years. The armament of the coast defenses about Singapore is said to be very good. The artillery were doing some excellent shooting with rapid fire guns at a moving target at the western entrance as we passed on the steamer.

I dined with Captain Anderson, adjutant of the Madras regiment, and member of the Indian Staff Corps, at Alexandria Barracks, where they are to erect new permanent barracks for the native infantry.

The officers at present are living in nipa shacks about like the temporary shelters used by our officers in the Philippines. They have excellent lawns and many flowers about the houses.

He said that many of the natives of India were excellent shots, much better shots than the British soldiers as a rule, and for that reason there was a different course of instruction for the native and white troops, in order that the two could not be compared by the natives in favor of themselves.

To encourage interest among the European residents in the Malay States and the Straits settlements the government invites them to use the target ranges, to receive instruction from the military, and supplies them with an annual allowance of ammunition for use on the range, and the use of government service rifles.

In the English colonies in the tropics the army officers use a very simple, inexpensive and neat mess jacket, with the same collar and strap ornaments as are used on the khaki or white blouse. This custom enables one to dress for the evening in a cool dinner dress which answers every requirement in that warm climate.

The police of the Malay States is formed of Sikhs, Pathans and Malays. The Malays are perhaps not so trustworthy, but are said to have more brains than Sikhs, and they will often assume responsibilities and direct the Sikhs in emergencies when the Sikhs are waiting for orders, and are willing to obey anyone who will assume to give them orders. The system of constabulary and police for the Malay States, although the material is not the best, is creditable. They are used extensively in patrolling the roads. The police always look clean and soldierly.

There are small police stations all about the country. The court rooms, which are in simple, small, open buildings, are near the police stations. The latter are clean and well suited to the purpose. The magistrates, who are designated by the Resident, generally in addition to their other duties as district administrative officials, move about constantly and appear at generally fixed dates at the various places where

they hold court. In each police station there is a lockup for the temporary safe keeping of prisoners.

The uniform is khaki with canvas puttees.

The constabulary and police regulations are taken from the Indian government and adapted to use in the Malay States.

The so-called Kitchener helmet is an excellent head dress, both with khaki and white. For comfort and appearance it is the most attractive headgear I have seen in the tropics.

I noticed carefully many British soldiers dressed in their khaki. They were as a rule not so well set up nor as fine looking as our men, nor were their clothes of as natty a cut as those that our neatest men wear. But their helmets gave them a striking military appearance.

The same is true of the officers, both in white and khaki.

All of these native troops are comparatively inexpensive, and efforts are made to keep them so.

INDIVIDUAL TARGET COACHING CARDS.

By Captain WM. T. LITTEBRANT, Twelfth Cavalry.

FREQUENTLY on the target range an officer is dumfounded at finding a soldier who has, in spite of his thorough preliminary instruction, completely forgotten how to adjust his carbine sight for elevation as well as for windage, or having fired, fails upon subsequent occasions to remember the adjustment.

The accompanying card is submitted, hoping that it may remedy some of the trials of the range, and promote better individual results.

Each carbine has its own individuality—different in different men's hands. A graphical record of the carbine that I had last season I found a valuable aid in my own shooting.

It is also a noted fact that ideas vary as to what 5, 10, 20, or 40 mile winds are, as well as their effects. This system concerns only effects. Where the winds are inconstant in intensity they must be mentally averaged; the system is simply a rough, though valuable method of jogging the memory.

Rarely does a man shoot his preliminary and record shots when the winds and the light are the same, and even if he did, he would find it difficult to recall the exact previous settings of the sight. The windage taken at all ranges is the same for one position of the range flags, hence, by keeping a record of the windage and elevations as indicated by the sight, the man will, in a few days, have a complete graphical record of the effects of certain winds as indicated by the flag, and certain lights as indicated by his record of them, to guide him in his shooting. He should keep his card by his side while shooting, frequently consult it, and

make his notes thereon under the proper flag, when he finds himself satisfied that he has the proper setting for wind, light and range.

The forms on the card, furthermore, contain information that will assist the fine shot probably more than the poor

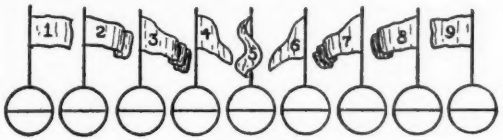


Fig. I.

one. The card may be simply a half sheet of foolscap paper, and when not in use, kept on an ordinary bill file, and taken to the range with the other troop records.

Fig. 1. This represents the flag in the various positions that we see them on the range, numbered for convenience 1, 2, 3, 4. 5, 6, 7, 8 and 9, When the wind is of greater intensity than that just sufficient to extend the flags to the position occupied by flags Nos. 1 and 9, the shooter must estimate for himself, or learn by experience how much windage to take.



The diameter of the circle below the target represents, first, the horizontal projection of the target in vertical position; second, the vertical projection of the horizon. The circumference of the circle is used to indicate the position of the sun, and the character of the light.

To illustrate:

The circle in the first circumference indicates a bright sun, unobscured by clouds, at sunrise; the corresponding position at the other extremity of the diameter representing sunset; intermediate points on either circumference or diameter representing hours corresponding to the time of day that would find the sun in that position.

The second indicates a bright sun at noon. The position of the circle corresponds to the XII on the clock dial. With

reference to the plane of the target it is observed that the sun is behind its horizontal projection, hence, the sun shines on the back of the target.

The third indicates a sun overhead at noon (for the tropics).

The next indicates a bright sun unobscured by clouds, at 9 A. M.; the sun shining on the face of the target, hence represented as passing over the lower semi-circle, the middle point of which would represent noon.

The last indicates a cloudy day, about 3 P. M.

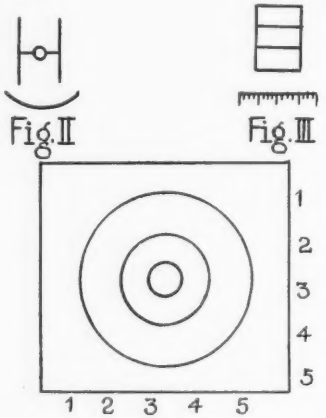


Fig. VI.

Sgnt. Howry.

This is a refinement that probably most men will not at first grasp, but it shows the possibilities. This record of time and sun should be connected with the record of elevation and windage, by a line or by an alphabetical reference, as shown on the individual range card submitted.

Figure 2. This form represents a sight-leaf on a carbine, and a windage-circle, and, when marked by pencil or ink on the range, as on the accompanying card, will plainly indicate the elevation and windage taken at the time, and under the conditions represented; it is especially valuable to record elevation. In my experience of seventeen years I have not

found one carbine that in shooting I adjusted according to the marked elevations on the sight; and this experience extends from sea-level at Batangas, P. I., to the ranges at Wingate and Bayard, N. M., over 5,000 feet elevation.

Figure 3. This represents the sight of the new weapon —being a blank form, the figures representing the ranges, and the center line indicating the windage taken, being inserted on the range by the man firing.

Figure 4. This contains empirical information, in the absence of the man's own. These figures are the result of my own shooting. Thus, I find that when the wind is a little stronger than that indicated by the flag occupying the

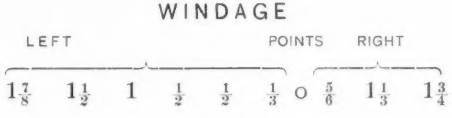


FIG. 4.

sixth position, I take no windage, either to the left or right. (See range card on page 63.) The next stage of wind from the right, shown by the flag (7), immediately caused me to take five-sixths of a point of windage to the right, whereas no wind at all as shown by flag (5), necessitated windage to the amount of one half point to the left. Likewise, a little more wind from the left, flag 4, necessitated no more windage; flag 3, however, caused a jump to one point.

A wind indicated by flag 6 would necessitate one-third point of windage to the left.

I observed on the range that the long flags supplied by the Ordnance Department, plainly indicated by the number of their folds, or the absence of them, decided difference in wind velocities Those shown in the diagram are enough to note; they mark successive noticeable steps. The windage valuations are my own for one carbine. If they do not suit another person, he should cross them out. and substitute such others as he finds correct. In using this stamp care must be exercised to have the extreme bracket ends embrace

the outer flags; shifting it to the right or left makes the data incorrect.

Figure 5. This contains the range indications and the value on the target of one point of windage, twenty-five

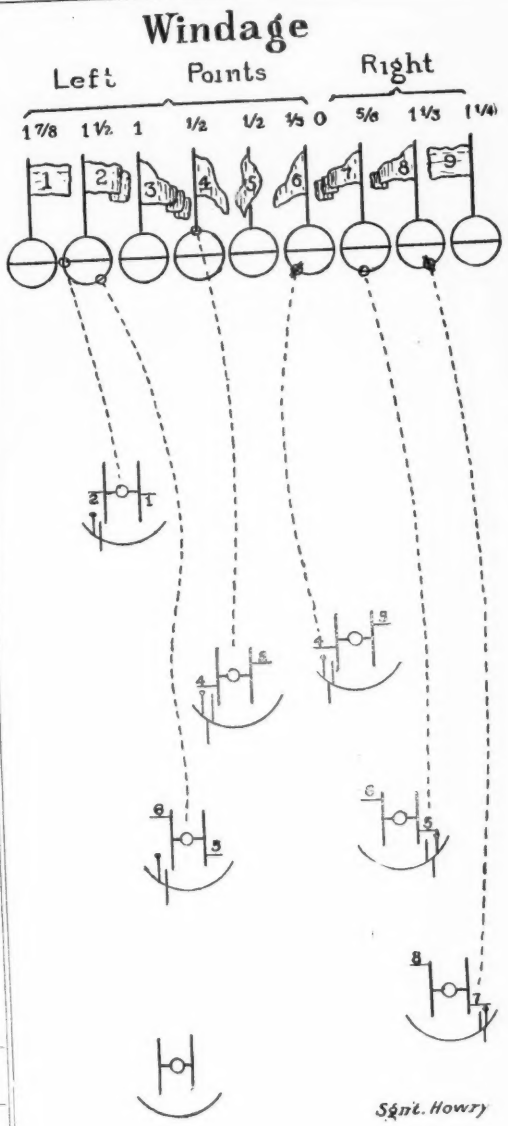
Yards.	INCHES.		
	1 Pt. Wind.	25 Yds. Elevation.	Fouling.
200	12	2	4
300	18	5	6
500	30	11	10
600	36	16	12
800	48	26	16
1000	60	40	20

FIG. 5.

yards elevation, and the allowance for fouling at the various ranges. These figures are taken from Laflin & Rand's table, and Lieutenant Mumma's pamphlet.

Figure 6. (See page 60.) This record should be kept on a separate pad by some one detailed to keep it. It should record accurately the location of the individual shots. Attention to this will prevent men sleeping and lounging on the range when there is a possibility of their learning something.

Yards.	INCHES. 1 Pt. Wind.	25 Yds. Elevation.	Fouling.
200	12	2	4
300	18	5	6
500	30	11	10
600	36	16	12
800	48	26	16
1000	60	40	20



INDIVIDUAL RANGE CARD.

EFFORT—OPPORTUNITY.

By COLLIN H. BALL, First Lieutenant Fourth Infantry.

[Response to a toast at a banquet to Brigadier General J. Franklin Bell, Chief of Staff, given by the Service Schools at Fort Leavenworth, March 17, 1906.]

MR. TOASTMASTER, GENTLEMEN:—It goes as good philosophy, that given knowledge and native ability, success among men depends in great measure upon two important factors—effort and opportunity.

We all know that fame does not grow on a brier bush, nor do all things come to the man who waits. St. Peter's did not lift its own noble dome to overlook the Tiber and the Seven Hills of Rome in simple obedience to a dream-wand in the hand of Michael Angelo. The cities, the canals, the ships and mills—everything, to the hewing from a primal wilderness of the fairest, grandest country since man recorded time, is evidential of effort.

For Hannibal to cross the Alps, work; for Peter to build an empire, work; for the First Consul to weld a militant rabble into a splendid force and lead it into the vine-yards of northern Italy and strike the blow that founded a dynasty, work. Work built this house; work built yonder city; work produced every railroad; work made the clothes we wear; work composed and sung every oratorio. "In the sweat of thy brow shalt thou eat bread," was uttered as a blessing and not a curse.

There is a road which leads from ambition to success, but it's not paved all the way. He who would eliminate time, distance, effort—who would violate the inimitable laws of compensation and take from the gods their treasures without a trial, had as well move to another world than this.

These be truths which apply alike to kings and men, and whether you are forging out the constitution for a State or preparing a restaurant bill of fare, in order to excel, you must burn the midnight oil and use your wits and ink.

With this then in mind let us remember that a state of individual preparedness for whatever we may be set to do, should be our aim, and then look out for opportunity.

Even before our species began to carve their cryptographic messages on stone, they understood the value of precept and example. The drawing of parallels has ever been a favorite method of education, and certainly we younger men can do no better than to reflect upon the career and position of our distinguished guest of to-night. To a thoughtful mind he represents a coördination of three things, possession of which precludes every possibility of failure—ambition, ability, energy.

This school is designed to prepare the able and energetic for high place, and I honor those who win. The head-hunter and the tenth-hunter are similar, the former being in quest of real, and the latter figurative gore. Their scramble, to an outsider like myself, is amusing and picturesque, and I feel like Pedro, who, on Sunday afternoon goes forth in starched *camisa* to applaud the cock that wins.

I knew a bright young man, who stood first in his class in college, and on graduation delivered a remarkable valedictory address. It was academic and precise. Jake Hammil said it was like the Platte River— three hundred miles long and three inches deep. But we expected great things of him. We fully believed he would lunch on earth and dine high among the stars. He did neither. He starved for a while, then developed a *penchant* for signing other people's names to things, and finally learned the lock-step.

This incident is not dragged in, my friends, to prove that all stars go wrong, for they don't, but to illustrate the well-known fact, that you can never succeed on knowledge alone, but must climb, and do it in the right way. The moon nor any considerable part of the solar system is to be had on bogus paper.

I recall to-night a noted general, who stood high upon a peace-pedestal of fame. He had translated Jomini's Napoleon, and he rode that book during nearly four years of a great war, but it went down under him at last, and he was passed over by a serious, tireless soldier, who, standing on the field at Appomattox, wrote his name on the scroll of immortality.

So when you have learned all there is to know, take example from our guest, and upon a solid foundation build a superstructure that will endure by keeping busy throughout your career. And to one thing ever be alert—opportunity, a jewel of great price, frequently lying around and usually overlooked. Valuable indeed is that remarkable sonnet, rich in philosophy and of tuneful muse, born in the mind of a distinguished Kansan, who, a few years ago, said of opportunity,

"Master of human destinies am I!
Fame, love and fortune on my footsteps wait.
Cities and fields I walk: I penetrate
Desert and seas remote, and passing by
Hovel and mart and palace, soon or late
I knock unbidden once at every gate!
If sleeping, wake: if feasting, rise before
I turn away. It is the hour of fate.
And they who follow me reach every state
Mortals desire, and conquer every foe
Save death; but those who doubt or hesitate
Condemned to failure, penury and woe,
Seek me in vain and uselessly implore.
I answer not, and I return no more."

REGULATIONS FOR PACK TRAINS AND PACKING, U. S. ARMY.*

PULLMAN PACK OUTFIT AND HOW TO USE IT.

"THE Pullman Pack Saddle and Panniers" (Plates 1 and 2) is designed to use with the aparejo, of which it becomes a part, without in any way displacing the aparejo and its usefulness as the safest and best method ever devised

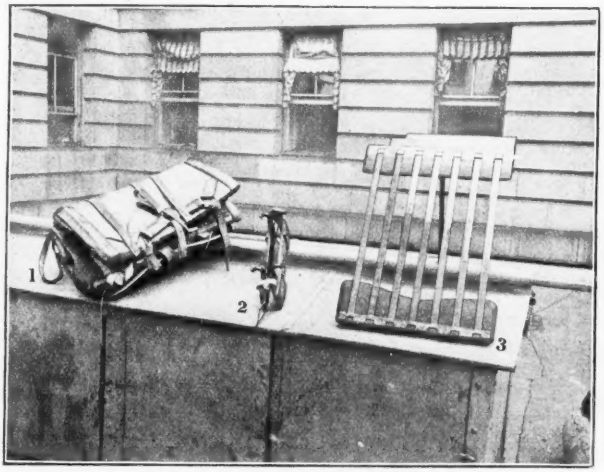


PLATE 1.

1. Panniers folded for shipment.
2. Pack-saddle folded for shipment.
3. Daly's frame and ribbing for aparejo, front.

for protecting the pack animal's body from the wear and tear of heavy load.

*This article is a reprint from the Regulations for Pack Trains and Packing, Quartermaster General's Office. (Chapter I.)

In order to awaken interest in a subject so fraught with importance to the cavalry as packing, the JOURNAL reprints this here. It is followed by an article

The Pullman Pack Saddle and Panniers, as connected with the aparejo, does away with all ropes, lair, sling, lash and cargo, and the diamond hitch method of fastening the pack to the aparejo; with all canvas heretofore used, lair, pack and cargo covers; and reduces to a minimum, if not entirely, the necessity for employment of the experienced and skilled packer.



PLATE 2.

1. Panniers open.
2. Pack-saddle open.
3. Daly's ribbing for aparejo, back.

This pack outfit can be handled quickly, efficiently, and on observation by the ordinary laborer or soldier.

The panniers, when loaded and hung on the saddle and cinched, become a fixed part of the aparejo, and cannot move or get out of balance or come off unless the aparejo cinch breaks and the aparejo comes off.

---

upon the same subject by Mr. W. H. Daly, Chief Packer, U. S. Army. Our officers will be glad to read anything that Mr. Daly has to say about a subject upon which he is the recognized expert of the army. The JOURNAL expects later to give its readers some of the experiences of Mr. Daly during his forty years' service with the army. But at present we wish to call the attention of officers to the subject of packing. Are we ready to do away with the expert

They are weather and water proof, and preserve intact, without danger of loss by breakage of cargo packages, contents of the panniers.

The panniers are planned standard sizes, and will hold the standard sizes of all packages—bags, boxes, chests, bales or crates—of the ordinary field supplies of all departments, —Quartermaster, Commissary, Medical and Ordnance.



PLATE 3.
Panniers Loaded and Covers Fastened.

In case it becomes necessary on any odd occasion to pack packages of an extraordinary character and unusual odd sizes, the aparejo is still there intact, and can be utilized as heretofore, and in order to provide for such contingency, every eighth pair of panniers in a pack train will be equipped with and carry habitually one lash rope in the nigh pannier, and one sling rope in the off pannier, to be used when required.

---

packer? The JOURNAL most emphatically says No; but we shall be glad to hear other opinions and give them the space they deserve.

We trust the entire subject may be seriously considered by our officers and that valuable suggestions may be made. We print an excellent order from the Philippine Division upon this matter.

The JOURNAL is under obligations to the Quartermaster General's Office and to Colonel John W. Pullman for the use of the plates which illustrate this first article.

TO USE THE PULLMAN SADDLE AND PANNIERS.

1. The cargo or articles to be packed being at the depot, camp, or place of departure of the pack train, will be carefully assorted by the packmaster and his men, and prepared in pairs of equal weight packages, and as near as may be of the same articles or class of supplies—one pack for the near side pannier and the other pack for the off side pannier.

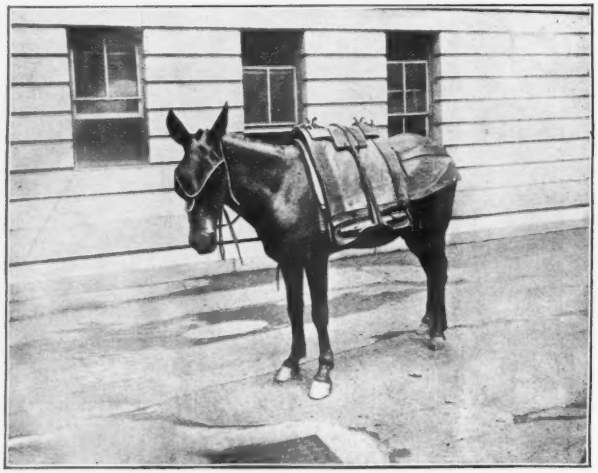


PLATE 4.

Pullman Pack-saddle in Place.

2. The panniers are all numbered in pairs, in plain numerals, stamped on the exposed side in black figures, from the number 1 and so on, 2, 3, 4, 5,—up to any number of panniers fabricated and issued.

3. The packmaster will see that the cargo to go into each pair of panniers is secure and in good condition, and as near one hundred pounds in each pannier as he can conveniently arrange, giving to each mule two side packs of about 100 pounds each, or a load of about 200 pounds to each mule, which is considered a heavy enough load for military packing and for animals which it is desired to keep well, free from

sore backs, and capable of keeping up in long marches with the cavalry horse and his rider.

4. After the cargo is assorted, as above, and arranged into pairs of packs of as equal weight and nature of stores as may be, the packs will be placed in the panniers, pair by pair, and covers securely fastened (Plate 3).

5. The packmaster will, during the process of packing the panniers, take a list, in a proper memorandum book pro-

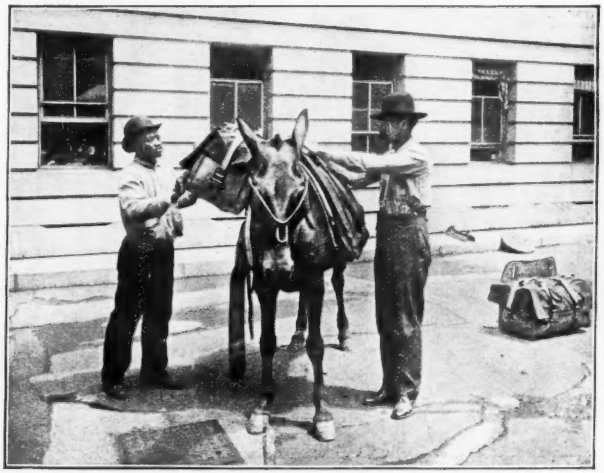


PLATE 5.
Putting on the Off Pannier.

vided for that purpose, of the number of each pannier and pair of panniers and the contents of each, thus:

No. 27 and 28—Flour.

No. 17 and 18—Oats.

No. 45—Horseshoes. No. 46—Horseshoe nails; etc., etc. This list will be made in duplicate and one copy furnished the quartermaster of the command, and the other retained by the packmaster; the object being that at all times, any special class of stores, or any article from the cargo being needed, the proper pannier can be at once identified by its number and its contents obtained, without searching the whole cargo.

6. The cargo being thus all prepared for shipment, the panniers will be placed in pairs in a row, ready for loading on the animals.

7. The aparejos having been assigned and fitted to each animal by the packmaster, the Pullman saddle will be placed on top of the aparejo and fastened to it by buckling down the rear and front hold back straps (Plate 4). The aparejos are placed on the mules as usual, and the aparejo cinch is

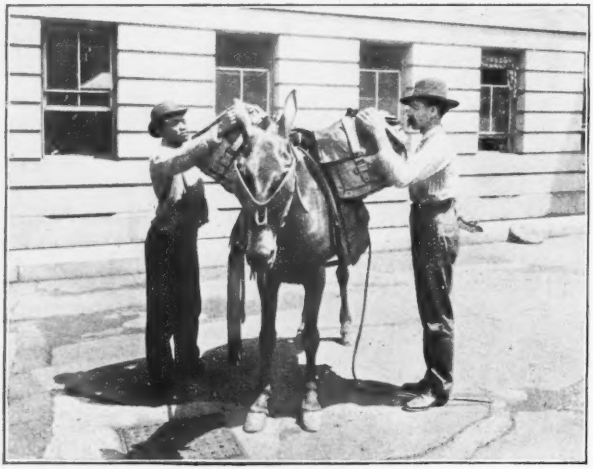


PLATE 6.
Putting on the Nigh Pannier.

passed over the aparejo and saddle and tightly cinched (Plate 4). The saddle thus becomes a rigid part of the aparejo, but the hinge renders it flexible, giving with the swaying of the animal's body or of the loaded panniers.

8. To pack the mules, the off packer picks up the off pannier of the pair of loaded panniers assigned to the mule being loaded (the pannier having the cinch affixed to it), and places it well up on the mule's back, top up and back side of the pannier against the saddle. The nigh packer quickly slips the slots of this pannier over the nigh side hooks of the saddle and presses the pannier flap securely down (Plate 5).

9. The nigh packer then picks up the nigh pack (the pannier having the latigo cinch strap affixed to it) and places it in a similar manner on the saddle, nigh side, the off packer at the same time slipping the slots of the pannier flap over the off side hooks of the saddle.

Both packers then settle the panniers securely down and against the aparejo, balancing them evenly by a little pull and sifting motion with both hands (Plate 6).



PLATE 7.
Cinching the Loaded Panniers.

10. The off packer passes the pannier cinch under the mule's belly toward the nigh packer, who seizes it, slips the latigo strap through the cinch ring, and cinches securely (Plate 7).

11. The blind is then taken off, head halter strap secured, and the animal turned loose (Plates 8 and 9).

12. In arranging cargo, odd sized or shaped packages which rain will not injure, such as long handled shovels, axes, crowbars, large bales of hay, etc., can be placed in the panniers and the ends allowed to stick out to the rear, front or upwards, as may be convenient, and the pannier covers

left open, or only partly buckled down, as may be practicable.

13. *For Foraging.*—The outfits will be found very useful, as any articles of food or provisions, such as loose or shelled grain, vegetables, meats, etc., can be stowed loosely in the panniers and conveyed safely to camp.

14. *For Supplying Ammunition to Firing Line.*—The empty panniers can be filled at the ammunition supply train with

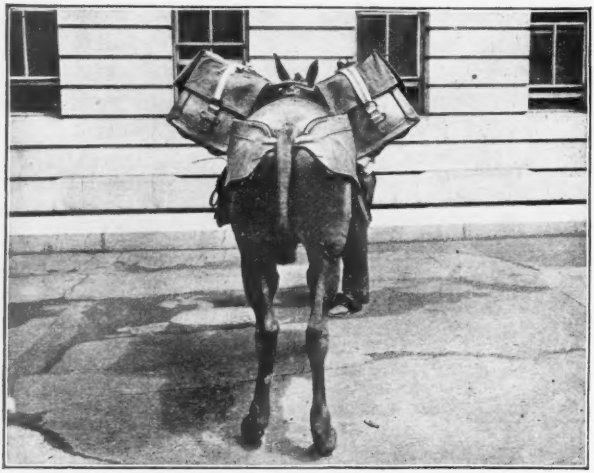


PLATE 8.
Rear View of Animal Packed.

loose packages of small arms ammunition, and each animal so loaded can be led and trotted along and supply passed out to the men on the line, no matter what kind of terrain they are operating in.

15. Under emergency, pack mules and aparejo are not necessary for this service. The horses of a cavalry troop can be utilized. The odd numbers dismount, unsaddle, remove their saddles, and cinchas with latigos, cinch the Pullman Pack Saddle to the horse on top of the saddle blanket with the saddle cinch and hang on the loaded panniers. The even numbered troopers then lead the loaded horses along the firing line and deliver the supply. In the same

manner, and under emergency, draft animals can be unhitched from wagons, artillery horses not in action from their carriages, and similarly utilized for this temporary service.

To provide for such contingency, a limited supply in number of the saddles and panniers with aparejo cinch might be carried along with and in the wagon train, one or two to each regimental train, and with the reserve ammunition wagon of each battery.



PLATE 9.
Front View of Animal Packed.

PACK TRANSPORTATION.*

By H. W. DALY, Chief Packer, U. S. Army.

PRIMITIVE man, in seeking a mode of transportation beyond that of the personal burthen, naturally brought to his aid the most docile and tractable of the animal kingdom, as nature provided by environment. The elephant, camel, llama, ox, horse, mule, burro, reindeer and dog, all have paid tribute to relieve him. As a sequence, pack saddles of various design, suitable to the conformation of the animal employed, necessarily followed.

History records that Isabella of Spain, in 1486, for the conquest of Granada (expulsion of the Moors) organized, equipped and maintained pack trains aggregating sixty thousand mules and burros. These carried supplies and munitions of war for her army of forty thousand infantry and twelve thousand cavalry.

In Mexico, on the road from Vera Cruz to the City of Mexico, a stone paved road (calzada) laid out by Cortez, and nearly three hundred miles long, I have seen, before the advent of the railroad in 1873, pack trains loaded with coffee, sugar and spices. These packs were made up to weigh from one hundred to one hundred and twenty-five pounds each, and were wrapped in coarse matting, made from the fiber of the agave and other indigenous plants. One peculiarity of the sugar, it was always in loaf form, of a color one may term a dirty white, and hard as adamant, but withal full of saccharine matter, and very pleasant to the taste. Silver was also carried from the mines (in brick form) of Zacatecas, Guadalajara, Guanajuato, etc., to the ports, to be shipped to

*The Journal is indebted to the United States Military Academy Press for the first eleven figures in this article.

Spain. Rates for freighting, ranging from thirty to seventy-five cents per ton per mile, or for the service of the animal for the trip from eighteen to twenty-five dollars, compared favorably with the rates charged after the discovery of gold in California when pack trains, controlled by Americans,

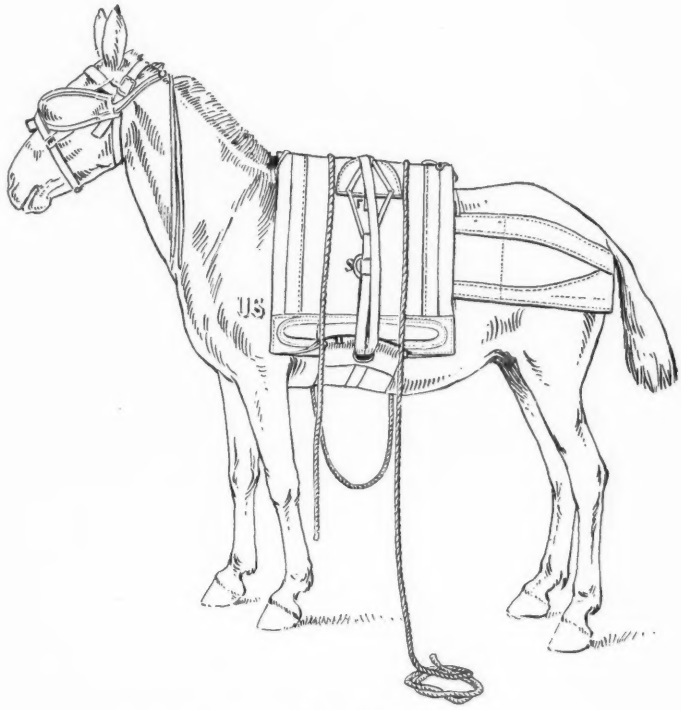


FIGURE 1.

The sling rope in position on the aparejo, ready to receive side packs or load.

dotted the hills, carrying provisions, furniture, mining supples, etc., to the mining towns in Oregon, Washington, Idaho, Nevada, Montana, and California.

In the early fifties and sixties on the trail from the Dalles to Umatilla Landing, Walla-Walla, Lewiston, Kootenay, Salmon River, Frazer River, etc., could be heard from hill to hill the tinkle of the pack train "bell wether," that in-

dispensable factotum in guiding the unwary and ofttimes fractious shave tail into proper observance and method of keeping position in due form when climbing a mountain side, or passing points of danger. The "bell" was ordinarily a sheep bell attached by a strap to the neck of the horse. The latter is termed the "bell horse," and is alluded to as "the bell," in such expressions as "get the bell," "lead the bell," "stop the bell," "call the bell." A peculiarity of the animal—mule—is evidenced by its fondness for the horse, and it will fight for position nearest him; in this sense no mule following is allowed to take position ahead, unless lack of endurance from a long day's travel causes some to lag to rear. Mules showing fondness for the bell (horse) are alluded to as "bell sharps."

The whistle of the "arrieros" (packers) to their pets encourages them in their climb on the mountain side, and the relative merits of their mules they discuss in friendly rivalry when squatted round the camp fire. The packers will spend odd hours of loving toil upon the grupera and corona, (crupper and saddle cloth) working in the representation of some animal, bird, or insignia, in silken threads of various hues. In government service this custom obtained prior to the Spanish-American War, 1898.

On the discovery of gold in California, the adaptability of the pack mule for carrying supplies into the mining camps not accessible by wagons, was readily recognized by the Americans. The mule and his aparejo were in constant demand, and the organization and employment of pack trains became a source of profit to many individuals.

The service rendered by civilian pack trains employed by General George Crook in the latter sixties in operations against the hostile Shoshones and Bannocks in Nevada and Idaho, led to the purchase of these trains by our government. From that time pack trains were used by officers of our army, such as Generals Crook, McKenzie, Howard, Terry, Gibson, Custer and Miles, in the subjugation of the hostile tribes, notably the warlike Sioux, Cheyenne, Nez Percé and Arapahoes in the Northwest, the fleet and vindictive Kiowa and Comanche through the Middle West, and last but

not least, the wily, slippery and bloodthirsty Apache tribes overrunning Arizona, New Mexico and Texas.

Through all the arduous field service necessitated by campaigns against these various tribes, the pack mule has borne his part, and now may be regarded as thoroughly identified with our army as an important means of transportation. Years of hard experience have made known the capacities of the mule, and have developed by a gradual evolution a greatly improved form of aparejo or pack saddle, and an ex-

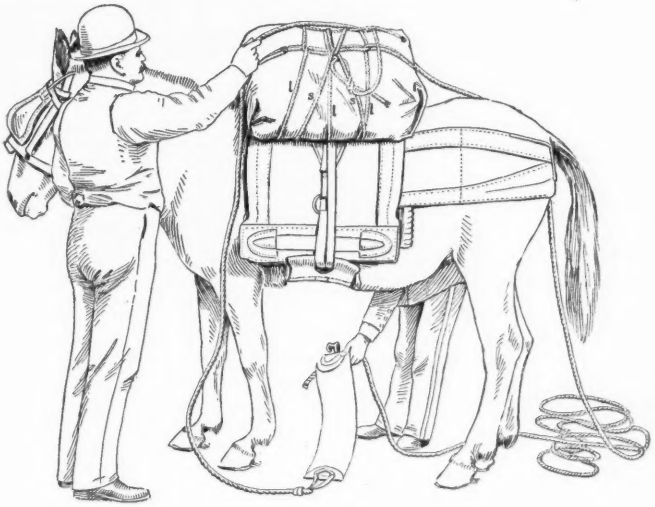


FIGURE 2.

The right hand holding lash rope near the top of load, the free or running portion between the packs and on off side of animal's haunch.

peditious and satisfactory method of attaching the load to the aparejo. A brief description of the two pack saddles most in use with civilized men herein follows.

PACK SADDLES.

1st. The aparejo; 2d. The cross-tree or saw-buck.

Of these two it is hard to determine which holds priority in respect to antiquity. The former is from Arabia and the Ganges, the latter from western Europe and British Isles.

The aparejo was introduced into Spain by the Moors on the conquest of that country in the eighth century, and the Spaniards under Pizarro and Cortez carried it into South America and Mexico.

Roughly speaking the aparejo consists of two rectangular pieces of heavy leather, sixty inches long and twenty-four inches wide, sewed together along the edges and across the

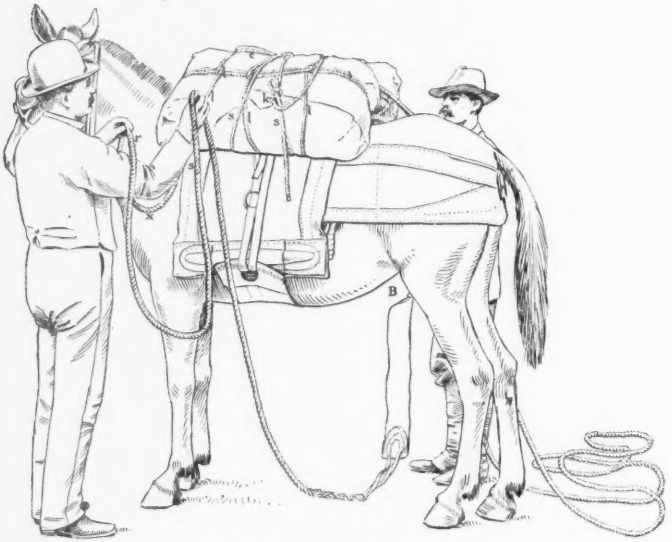


FIGURE 3.

The near packer holding the standing rope in the right hand, the running rope in the left, the loop of rope hanging downward on the outside of the right arm ready to throw the standing rope over the center of the load to the off packer.

middle. Two pouches are thus formed, into which hay or other similar material is stuffed so as to form pads, fitting the contour of the animal's body on either side of the animal's backbone. A broad crupper twelve inches wide and seventy inches long, cut in at the middle to form a "dock" to fit under the animal's tail, is supplied to keep the aparejo in position on the animal's body. A canvas cover is placed over the body of the aparejo to protect the leather from wear

and tear and the inclemency of the weather, and a broad canvas chincha, employed to cinch the aparejo on the pack animal with its accompanying saddle pad, form the makeup of the aparejo proper.

This brief description would not be complete without adding the essentials necessary for carrying commercial packages, etc. They are (1) The lash rope; (2) The sling

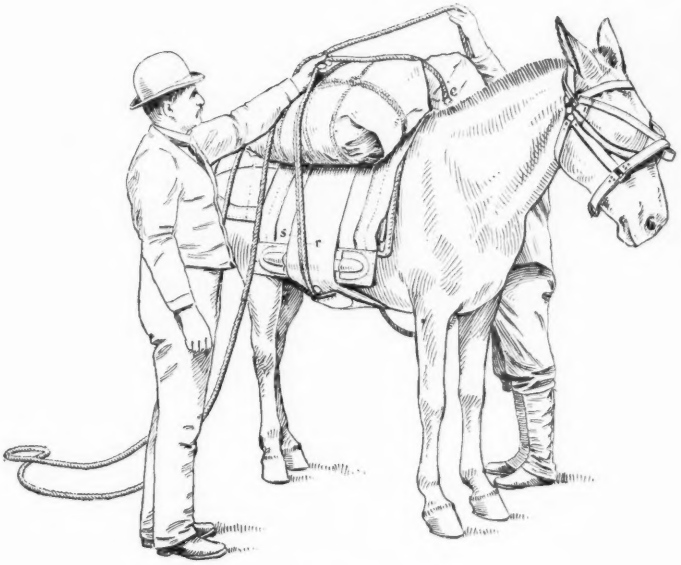


FIGURE 4.

The near packer assisting the off packer to bring the running rope to the center of the load, the off packer holding the end of rope under the running rope, the end of the rope partly over the animal's neck.

rope; (3) The lair rope; (4) The pack cover. The covers are used to protect such packages as may need it from inclemencies of the weather, the lair rope to securely wrap cover around packages forming a pack, or "side" pack, the sling rope to connect two or more packs forming a load for one pack mule, the lash rope for securely lashing the load to the aparejo. Such was the form of pack saddle and method of

carrying supplies employed by the Mexicans, as observed by the Americans on the discovery of gold in California.

2d. The cross tree or saw-buck.

This form of pack-saddle consists of two saddle bars, connected at front and rear by cross pieces shaped like the letter X, supplied with a breast strap, breeching and quarter straps, holding cincha and latigo or strap for cinching, accompanied by a saddle pad or blanket.

The essentials necessary for carrying supplies, are similar to aparejo, with the exception of slinging the packs forming a load, as also the method of lashing.

In slinging the packs, two half hitches are formed on the front prongs with the sling rope, the free end of rope on each side is placed over a prong at rear, the packs are lifted to position and the free end is brought under pack at center on each side, then up towards center of packs, and tied. The load is lashed by what is known as the "cross tree" hitch, and where this is not known, as among cattle men (cowboys) the "stirrup" hitch is employed, they oftentimes using an ordinary saddle for such purpose. This form of saddle (cross-tree) being devoid of pads to protect the animal's sides, prohibits its use for carrying box loads and unwieldy supplies. It is used rather by the individual miner or prospector, whose wants are few, consisting of his grubstake and mining tools.

In Europe and the British Isles, wicker baskets, open at the top and constructed so as to fit over the prongs of the saddle, are made, into which marketable supplies are packed. As the Missouri mule is practically unknown, the donkey takes his place, and it is not unusual for the baskets to be unevenly loaded; in such cases a billet of wood or mayhap a few stones are thrown in to equalize the load. I have seen a sack of wheat taken to the mill, with a large stone placed in the opposite basket to equalize the load, as also a live pig on one side (taken to market) and a live goat in the other, each animal being hobbled to prevent their jumping out, with a bunch of live chickens tied by the legs thrown in with the goat to equalize the load. A night serenade by Tomcats could not equal it.

In Cuba and Mexico I have seen "pouches" made of matting, placed over the aparejo, into which dressed pigs and goats were piled and taken to market. In both countries the mule is of small stature, and when loaded with grasses for the market the animal is completely hid by its load of grass. Eight or ten animals are tied head and tail, and thus driven to market by one or two individuals, and as oftentimes happens with the individual mounted on top of the load.

For the military service, however, where the pack animal may be called upon to perform long and arduous marches, to carry heavy loads and keep the road day after day, something more has been found requisite, and a gradual evolution has developed the aparejo now in use in our service.

An improvement in the quality of material used and in the details of construction, has been made. The principal improvement, however, lies in "ribbing-up" the aparejo, as it is termed. For this purpose two "boot" bars are introduced inside of the aparejo at ends or boots. Two "saddle" bars are likewise introduced inside and at top conforming to the "collar," as shaped in the aparejo; on each bar slots are provided to receive "ribs" of wood to give the aparejo stiffness to hold up a load, the ribs being tapered to give conformation to the body of the animal. The surface of the aparejo that rests on the animal's body is stuffed with suitable hay in such manner as learned by the expert packer. The boot and saddle bars are strapped so as not to cause bearing on the body of the animal, their purpose being to keep the aparejo in proper shape and avoid the necessity of the constant "setting or ribbing up" of the aparejo, as is obtained by the old method of willow sticks. See Daly's Manual of Instruction in Pack Transportation, published by the West Point Military Press for the use of cadets, 1901.

Hitches In Use In Pack Train Service.

1st. The diamond hitch.
2d. The double diamond.
3d. The Oregon diamond.

4th. The double hitch.
5th. The squaw hitch.

With the Cross-tree or Saw-buck.

6th. The cross tree hitch.
7th. The stirrup hitch.

The latter two are known in Europe and the British Isles and Canada, and I may add in Cuba and Mexico.



FIGURE 5.

Showing formation of the hitch ready to tighten. Near side.

The Sling Rope.

For slinging certain loads we employ:
1st. The single sling.
2d. The double sling.
3d. The cross sling.
4th. The double cross sling.
With the cross-tree we employ the half-hitch sling.

The Lair Rope and Pack Cover.

This rope is employed to wrap such packages as may deteriorate by exposure to rain and dampness. Certain defined methods of lairing packages are employed to hold the pack cover securely around a package or packages, forming a pack, termed, in the nomenclature of packing, a "side pack," that is, that portion of the load carried on one side of the aparejo.



FIGURE 6.

Showing formation of the hitch ready to tighten. Off side.

A description of the "diamond hitch" may not be amiss. Ordinarily speaking, the sling rope forms a "hold fast" for two side packs on the aparejo, prior to securing the load by the "lash rope."

In the formation of the diamond hitch and tightening of the load, two packers are employed. One, termed the "near packer," stands on the "near" side of the animal looking toward rear; his mate, termed the "off packer," stands on

the "off" side facing towards front. The sling rope being in position on the aparejo ready to receive the side packs or load (see Figure 1) and the "square knot" tied thereon at center of load (Figure 2), the "near packer" throws the end of the lash rope in rear of the animal and the cincha portion under the animal's belly convenient to



FIGURE 7.

Position of near and off packer in receiving and giving slack.

the off packer, who picks them up and holds them in the left hand as indicated in Figure 2 and stands erect.

The near packer now picks up the rope about five or six feet from cincha, with both hands, the right forward of the left, holding about two feet of rope between the hands, and stands forward from the load close by the animal's neck with both hands extended downward; he now draws the right hand backward to give impetus to the motion, and with one motion he swings the rope forward and upward to the center of the load, clearing the animal's haunch in the action,

allowing the rope held by the left hand to drop. (See Figure 2.) Now holding on to the rope held in the right hand, he draws on the running portion between the packs, bringing the right hand down by the side, arm's length, and reaches up with the left hand and grips the rope, so as to have the

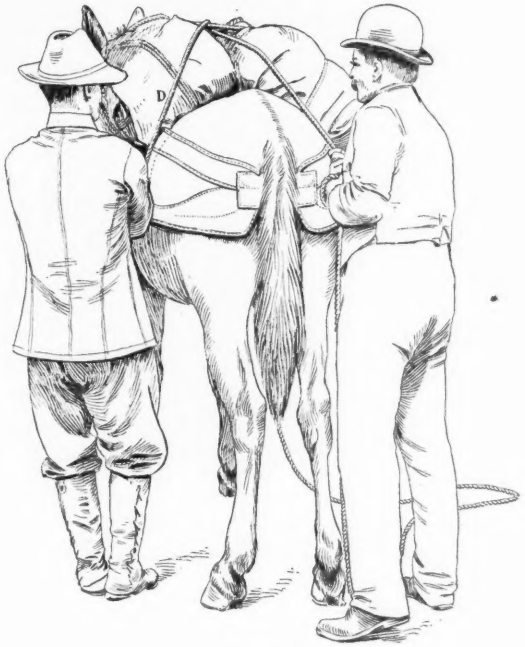


FIGURE 8.

The near and off packer in position ready to give and receive slack.

back of the hand upward. This brings the thumb under the rope (do not get the fingers under); he then draws on the running portion between the packs in similar manner as done by the right hand, bringing the left hand down by the side, arm's length; do not let go of the rope held in each hand. Now with an outward and circular motion, bring the left hand holding the rope to the elbow of the right; this leaves the rope or loop on the outside of the right arm, and raise both hands to the position as seen in Figure 3. Next, bring

the right hand to the center of the pack, and with one motion, both hands assisting, throw the "standing" rope held in the right hand over the center of the load to the off packer, the "running" rope held in the left hand over the mule's neck. (In this action the back of the left hand rests on the mule's neck.)

(*Note.* The separating of the standing from the running rope is done purposely, to avoid confusing the off packer; both ropes should never be thrown together. Further, when throwing the standing rope over the load, *do not* give the rope a wild outward and circular swing, else the standing portion below the hand will become engaged around the rear corner of the aparejo, and cause delay, with perhaps a strenuous expression from the off packer.)

Now draw sufficient slack on the running portion between the packs, about six or more feet, and throw this rope to the rear of the *near* pack allowing the rope to go free from the hands (this rope now becomes the "rear rope"). Next take hold of the running rope on the mule's neck, the left hand forward of the right, and with the assistance of the off packer, bring this running rope to the center of the load (*see Figure 4*) by the side of the standing rope; the right hand now slips down the rope to a point about midway between the pack and end of aparejo, termed the "boot," and passing the left hand *between* the standing rope and the aparejo, grip the running rope above the right hand, now both hands slipping down the rope and parting from each other, on each side of the standing rope, holding the rope in a horizontal positition, with a space of about six inches between each hand; jam this portion down between the two cinchas under the aparejo, and the hitch is "*formed*" on the near side ready to tighten. (See Figure 5.)

To avoid confusion, I have explained the formation of the hitch, by the near packer, in the first instance, as is customary in the practice of instruction. Now, we will take up that portion in the formation of the hitch devolving on the off packer.

The off packer, having picked up the end of the rope and cinch (see Figure 2), stands erect and waits for the standing

rope to be thrown over the center of the load (see Figure 2.) As the rope comes over, he grips the rope as high as the arm will conveniently reach, and immediately places the cinch hook in position under the aparejo, about six or eight inches, and draws down the slack on the standing rope by one or two quick pulls, and lowering the hook, so as to be convenient, he engages the standing rope onto the hook,



FIGURE 9.

The off packer taking slack on the "rear" rope.

from in, out, or from above, down; this leaves the standing rope next the aparejo and the running rope on the outside of the hook. (See Figure 4.) (It is understood the mouth of the hook faces forward; after engaging the rope, do not hold the rope taut on hook). Now place the left hand holding the end of the rope on top of the running rope, between the right hand and hook, and grip both ropes, the thumb under the running rope; now allow the right hand to slip upwardly on the running rope, and with the assistance of the

near packer bring this rope to the center of the load. In this operation the left hand will immediately follow the right to the center of the load; this will bring both hands together. Now with the right hand draw the end of the rope forward, held by the left hand, so that about twelve inches will fall on the near side of the animal's neck. (See Figure 4.) And the hitch is formed on the off side ready to tighten the load. See Figure 6 for the off side, Figure 5 for the near side.

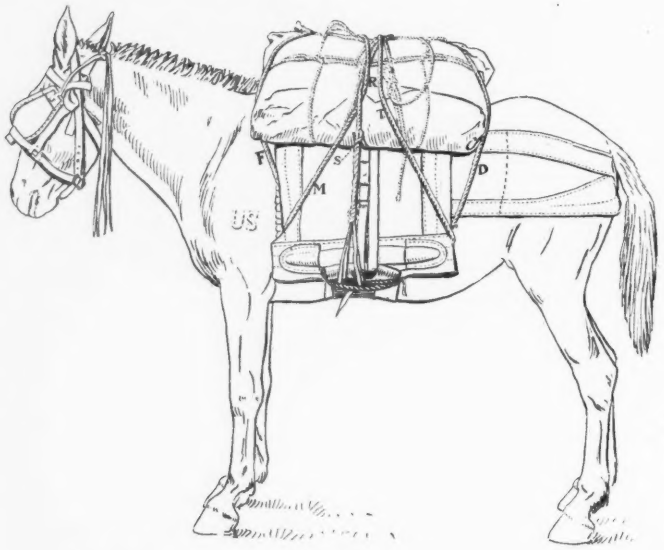


FIGURE 10.

Completion of the diamond hitch. "Near side view."

To tighten the load, the near packer places the left hand, palm down, on the side and center of pack; with the right hand he grips the running rope in the rear of the standing rope on the side of the pack (see Fig. 5) and brings it between the thumb and index finger of the left hand; now bearing against the pack with the left hand as a brace, he holds the running rope taut, and calls out, "*Go*," indicating he is ready to receive the slack from the off-packer. (See Figure 7.)

The *off packer* at the word "Go" takes hold of the running rope as near the hook as possible, and placing the left knee against the end or boot of the aparejo as a brace, he pulls all the slack possible by bending the body well over as seen in Figure 7, and gives the slack to the near packer quickly, in such manner as if trying to hit the aparejo with both fists. Now, give a second and similar pull and call "*Tie*," indicating no more slack can be taken on the standing

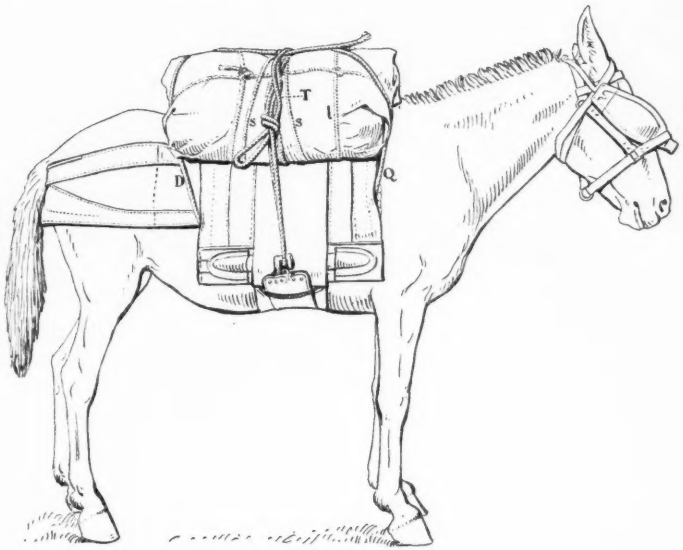


FIGURE 11.

Completion of the diamond hitch. "Off side view."

rope; now step quickly to rear and throw the "end" rope forward of the pack (this rope now becomes the "front rope"), and grasp the rear rope between the packs, ready to receive the slack from the near packer.

The *near packer*, at the call "*Tie*," brings the right hand holding the slack down toward the aparejo in the rear of the standing rope; the left hand receives this slack by bringing the hand under the standing rope, and gripping the running rope above the right hand, and brings it forward; the right

hand now assists the left in jamming the running rope upwardly, between the standing rope and pack; the running rope is thus held firmly, as if caught in a bight; now bring the free or running portion around the front corner or boot of the aparejo with the left hand (this is termed the marking rope), and with the right, grip the rope in rear of the cincha and pull the slack taut from the left hand; bring this rope up in the rear of the boot and place the left hand below the right, bringing the rope up quickly to the upper corner of side pack, and hold the slack taut with the left hand compressed against the pack, the right hand indicating how much slack has to be taken in by the off packer, who receives it, hand over hand quickly and prepares to set on the rope. Now take hold of this rope, termed the rear rope, with both hands and pull the rope taut; do not let go of this rope until you see the body of the off packer "setting" on the rope, then let go of the rope quickly; learn to turn the rope loose at the proper time; the difference will be noted. (See Figures 8 and 9.) Now step forward of the load and face to rear and grasp the end of the rope, and wait for slack from the off packer.

The *off packer* having taken in the slack from the near packer hand over hand, takes a wrap of the rope around either hand, and leans the body forward toward the animal's haunch and sets back on the rope with all his weight. (See Figures 8 and 9) He now holds the slack with the left hand and with the right brings the free or running portion under and around the boot of the aparejo to the front and steps forward and faces towards rear; now grip the rope with the left hand below the right, and bring both hands quickly to the upper corner of pack, the left hand holding the rope compressed against the pack, the right indicating how much slack has to be taken by the near packer. This is termed the front rope.

The *near packer* having gripped the end of the rope proceeds to take in slack hand over hand, until he has about six feet; this portion or end of rope is thrown over the center of the load to the off packer, and then continues to take in the remainder of the slack; now likewise take a wrap of the rope

around either hand and lean the body forward toward the load and "set" back on the rope as described for the off packer, giving the slack in similar manner; the near packer now holding the slack with the left hand, brings the free or running portion under and around the boot of the aparejo and partly toward the center of the load, and calls out "Rope."

The *off packer* having given the slack to the near packer steps to the center of the load and grasps the end of the rope and at the call "Rope," takes in all slack, hand over hand, coiling the rope in the operation, and holds coils in the right hand. The near packer noticing the off packer has received the rope grips the "top rope" with both hands and places the right knee against the boot of the aparejo as a brace, and calls out "*Take slack*," and gives it quickly as described for the off packer. The off packer receives the slack in similar manner as described for the near packer and raises the "top" rope with the left hand; with the right he places the coils under the "top rope" at center of the load on top; keeping sufficient slack he takes a wrap of the rope from right to left between the standing and running ropes and pack; holding the end or loop in both hands he jams them well up so as to be caught in a bight and takes a similar turn between the standing and running ropes and jams it up likewise, and the load is tightened. See Figures 10 and 11, showing completion of the hitch.

Note.—The act of tightening the rear and front ropes forms the diamond on top of the load, hence the name given this form of hitch; in its formation a single knot is made, and when undoing the hitch, the end or top rope when freed, is pulled or drawn from between the standing and running ropes to free the knot. In the formation of the diamond the rope has six designated names. On the near side we have the standing, running and marking ropes, and the front, rear and top ropes.

On the off side we have the standing, running, front, rear and top or end ropes.

The standing rope is that portion encircling the mule and load to point of engagement on hook. (See Figures 4 and 6.) The running rope from hook going back over center of

load to center of pack on the near side. (See Figures 4 and 5.) The marking rope from the center of side pack on the near side from point where jammed under the standing rope and front corner of hook of aparejo. (See Figures 5 and 10.)

The front rope passes over the front corner of the load, the rear rope in similar manner over the rear corner; in both cases on each side the rope passes under and around the boot. (See Figures 10 and 11.) The top rope from the rear corner on the near side running up toward and across the center of the load, to the center and side of the off pack, where the wrapping of rope indicates completion of the hitch. (See Figures 10 and 11.) I may add, there are various methods of finishing the hitch, as conditions of loading may suggest to the experienced packer.

The formation of the diamond hitch and tightening of the load is performed in from twenty to twenty-five seconds.

The operation of loading a pack mule, this includes the aparejo, is performed by experts in from forty-five to fifty seconds.

Two members of Captain R. D. Walsh's Troop, "G," Ninth Cavalry, Fort Leavenworth, during the athletic events in the latter part of November, 1905, put on two aparejos and loads on pack mules in one minute and forty-two seconds, or an average of fifty-one (51) seconds per pack mule; not a bad showing for ten days' training.

THE SKILLED PACKER.

Ordinarily one versed in the usages and customs of pack train service.

As instancing the requirements necessary for the proper discharge of his duties, the following may be enumerated:

He must understand the principles of "ribbing-up" the aparejo, to keep the animals' backs sound.

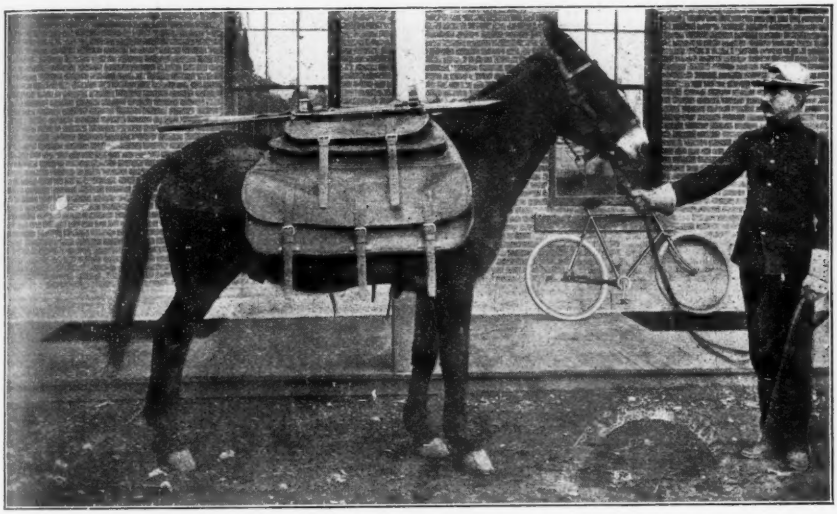
He must understand the relative toughness in different classes of wood suitable for the ribbing of aparejos.

He must understand the gradual tapering to give "ribs" necessary for conformation to the body of the mule.

He must understand how to select grasses (hay) suitable for filling or padding for aparejos.

He must understand where and how much filling is necessary in the aparejo, to give perfect conformation to the body of the animal, and the relative thickness necessary for the holding up of certain weighty loads, bearing on the proper surface on either side of the backbone and withers.

He must understand the causes of "bunches" or wounds



Pouches for Carrying Implements. Engineer Corps.
Off Side View Showing Position of Crowbars.

on any part of the animal's body covered by the aparejo and cincha, and the proper adjustment to correct the same.

He must understand the cause for the animal's "dock" becoming sore, and the proper remedy to correct the same.

He must understand how to fit, lace and cinch the aparejo to the mule, with due regard to the proper size of aparejo necessary.

He must understand how to make repairs to rigging (aparejos) and sew canvas.

He must understand the conformation of the hoofs and

how the animal should be properly shod for warm and cold climates.

He must understand how to select "pack" and riding animals, with due regard to endurance, strength and docile qualities.

He must understand what remedies to apply in case of cutting of blood vessels.



How Colt's Automatic Machine Gun is Carried on Aparejo.

He must understand what remedies to apply in case of snake bite, and how to prepare the wound for same.

He must understand how to prepare, "form" and cover cargo, and tie down properly.

He must understand how to arrange "aparejos" in an orderly manner, cover and tie down, when in bivouac the nature of the ground will permit.

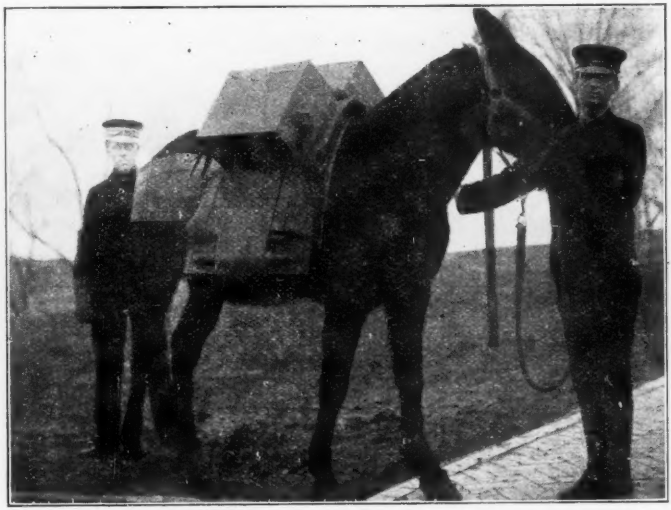
He must understand all hitches, knots and splices, customary in pack train service.

He must understand how to construct a travois to carry

wounded, and how to improvise a stretcher for similar purpose.

He must understand how to put on a load in the most expeditious and satisfactory manner, requiring not over one minute for ordinary loading.

He must understand how to catch a pack mule when his load needs attention.



How Wooden Ammunition Boxes Are Attached to Aparejo, the Metallic Cases Being Taken From Box Without Disturbing Position of Box on Pack.

He must understand how to quickly readjust a load, by sight and sense of touch, in less than one minute.

He must understand when traveling up or down a mountain how to cut, or take as many turns as necessary to conserve the strength of the animals.

He must understand how to guard against accidents when crossing a stream, either fording or swimming.

He must be attentive to animals and loads, that none of the latter may fall off, impeding the progress of the train.

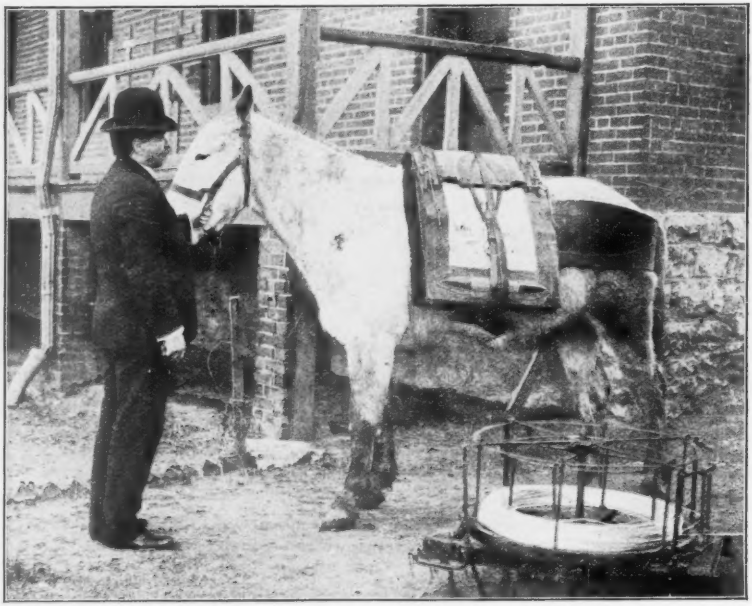
He must be quick to note weakness in animals during travel and relieve the same.

He must be quick to note conditions of country that may endanger the life of the animal and guard against accidents.

He must be watchful both day and night during travel that none may go astray.

He must be kind in his treatment of animals in his care.

He must have a knowledge of the component parts of a ration and the allowance for thirty days; also the allowance of grain, hay and bedding for horse and mule.



Ready for Pack Reel; Reel on Ground Showing How Coil of Wire is Engaged. (Pay Out at Rear.)

He must have a fair knowledge of cookery, especially the art of making good bread.

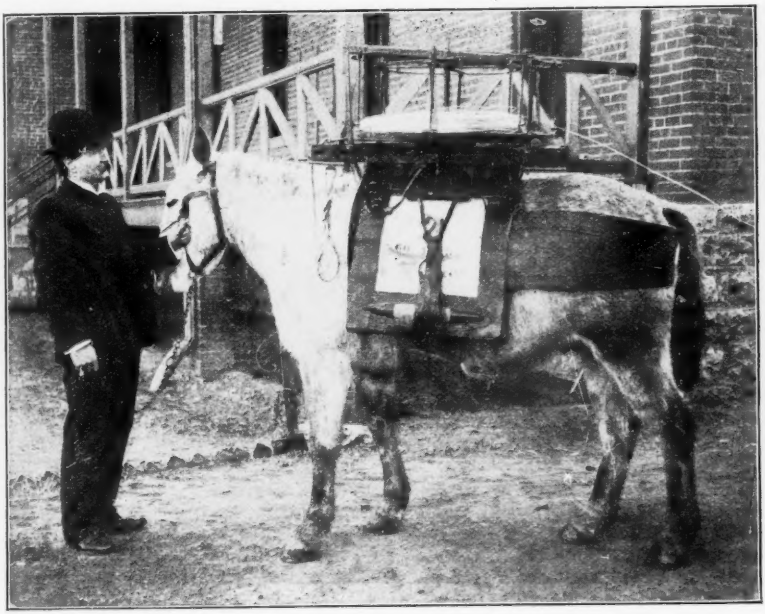
He must be prompt to obey all proper orders emanating from the pack master, or other proper authority.

He must always be ready for duty in all conditions of country and clime.

He must be honest and honorable in all his dealings with his fellow man.

THE NOVICE OR UNSKILLED PACKER.

One not versed in the usages and customs of the pack train service.



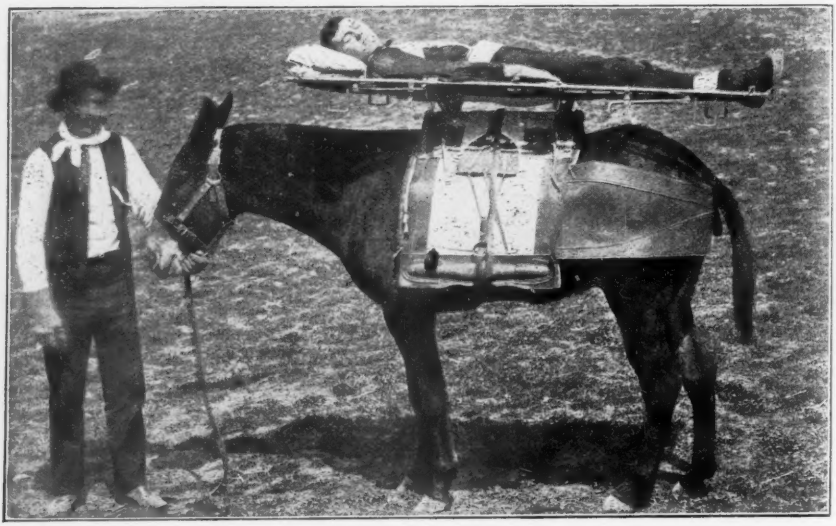
The Reel Packed and Paying Out.

THE ENDURANCE OF THE PACK MULE UNDER PROPER CONDITIONS.

As a prerequisite, he must be not less than thirteen and one-half and not over fifteen hands high, of blocky build, weighing not less than 850 and not over 1200 pounds, sound in body and limbs, age from three to seven. Head well formed and intelligent looking, broad between the eyes, eyes clear, large and full, ears flexible, teeth and tongue free of blemishes, neck full and inclined to arch, withers low and

broad, back short and straight, belly large and deep, dock low and stiff, legs straight, standing well apart at front and rear, the former indicating good lung power, the latter full in buttocks, the hoofs sound, broad and full, giving strength to climb.

The mule should have a pack saddle that will protect the body from all manner of loading, that is capable of being adjusted so as to support heavy loading when necessary with-

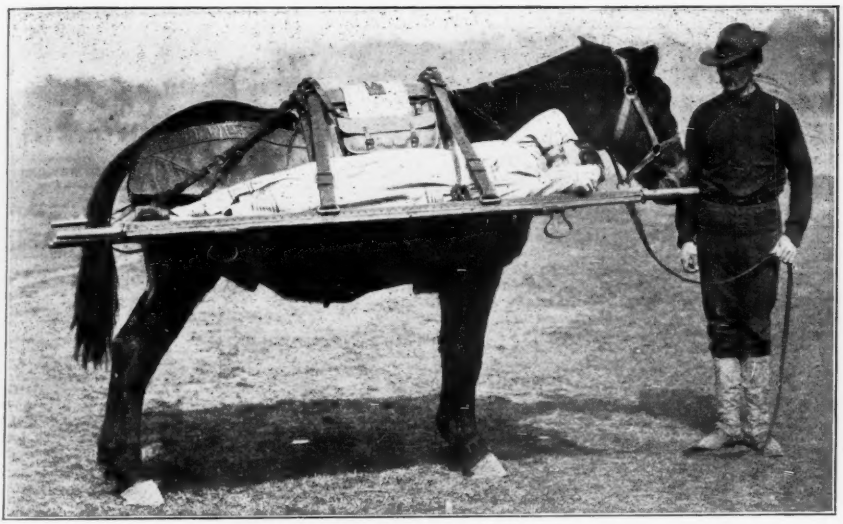


View Showing How Single Litter, With Patient, May be Carried on Aparejo.

out injury to the withers, and with a proper bearing surface on either side of the animal's backbone. For such a purpose there is no form of pack saddle that has ever been devised by the hand of man comparable to the "aparejo."

There must needs be intelligent or "skilled" packers, *i. e.*, men accustomed to travel by pack, ever watchful of the animals during travel, always prompt to render assistance to the weak, to conserve their strength, and ready to meet points of danger, guarding against accidents, men whose ready knowledge tells them the carrying capacity of every

mule in their care. In age from twenty-one to thirty-five years, height from five feet seven inches to six feet two inches, weight from one hundred and sixty-five to two hundred and ten pounds, sound in body and of athletic build, and not addicted to the excessive use of intoxicants, or display of bad or ugly temper, and thoroughly imbued with an "esprit-de-corps" for the service.



Arrangement for Carrying Double Litter.

ORGANIZATION.

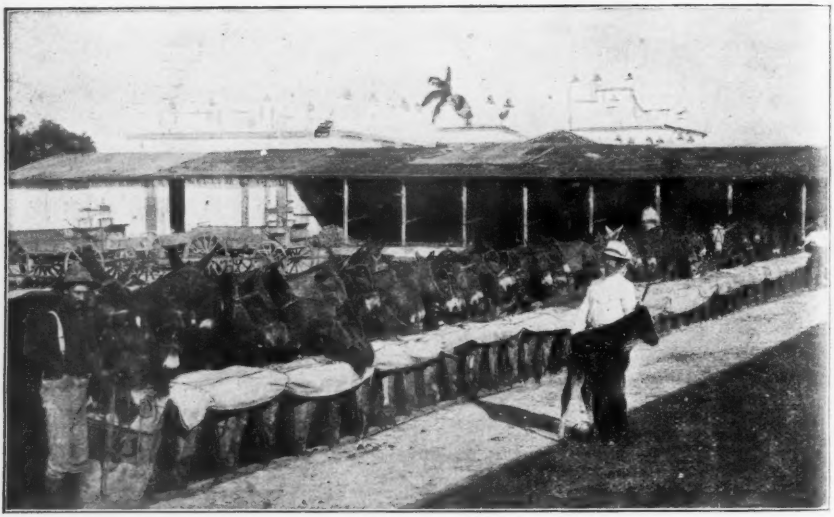
As the success of a general is dependent very largely in the proficiency of the unit, in the art of war, yet none the less is he dependent on the efficiency of the commissary and transportation supply.

No organization, that is assumed to be a needed want to thoroughly equip an army, can be said to be an expensive item, else we leave a loophole for the antagonist to outmaneuver and strike the enemy where weakest.

If we admit the fact "that armies will always need pack animals," certainly a properly equipped and thoroughly

organized pack train service will come nearer filling such a want, much better, than will a shiftless, unreliable personnel —a personnel wherein every member follows his own bent and inclination, thoroughly ignorant of the fundamental principles of the profession which he assumes to follow.

It may be taken as an axiom, "that ignorance never yet filled a needed want." As a sequence the time of peace is the time of preparedness.



Train 29, Matanzas, Cuba. Pack Mules at Rigging. (Roy Baxter, Packmaster.)

Opportunities have developed the fact, that transportation by pack animals, under certain conditions, have demonstrated their usefulness as a mode of rapid transportation.

The intelligent and "skilled" packer of to-day knows more of the conditions necessary to keep mules' backs sound, than was ever understood by the very best of packers in the campaign of 1876, known as the Sioux campaign, when "Custer" met his fate on the banks of the Little Big Horn, thirty years ago.

In those days we had expert packers, but we absolutely had *not one* that understood the proper principles of "setting-

up" the aparejo to keep animals' backs sound. We must admit the mule is not to blame for the ignorance of man, and ignorant packers never did and never will supply a want for competent and satisfactory transportation.

I may qualify this statement by saying "sound backs will always carry a load, sore backs never will."

The "aparejo" is a simple study, easily understood by any ordinary intelligent and thinking man, and if we desire to keep sound animals, I cannot help but emphasize the fact that after forty years' practical experience, no other form of pack saddle will supply the need of the aparejo.

The cross-tree or saw-buck and the "Moore" pack saddle, after years of experience in their use, have been found to be both brutal and revolting, and demoralizing the sense of justice in man to the dumb animal.

To maintain organization, both men and animals must be taught their duties, and regular practice marches be had, together with stated inspections of both men, animals and equipments to maintain efficiency.

The Aparejo Proper.

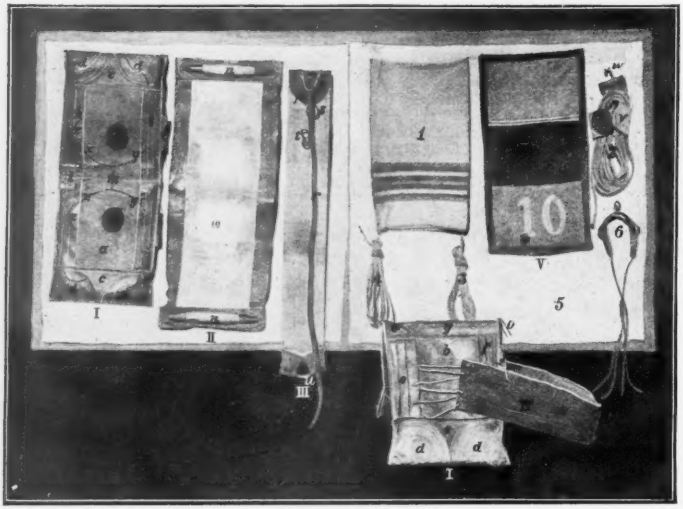
I. The body of the Aparejo.
- *a.* the belly piece.
- *b.* the back piece.
- *c.* the boot piece.
- *d.* the boot facings.
- *e.* the front facing } of
- *f.* the rear facing } back piece
- *g.* the center facing }
- *h.* the front facing } of
- *i.* the rear facing } belly piece
- *j.* the carrier pieces.
- *k.* the hand holes.
- *l.* the collar.
- *m.* the center stitch line.
- *o.* thongs for attaching cover to aparejo.

II. The Aparejo Cover.
- *n.* shoes or protecting sticks.

III. The Aparejo Cincha.
- *p.* leather facing.
- *q.* lacing of the latigo.
- *r.* the latigo, or cinch strap.
- *s.* the rendering ring.
- *t.* the finger loop.
- *u.* curved pipe.

IV. The Crupper.

V. The Corona.



THE APAREJO.

Accessories of the Aparejo.

1. The Pack Blanket.
2. The Lash Rope with Cincha.
   - *v.* the cincha.
   - *w.* the cincha hook.
3. The Sling Rope.
4. The Lair Rope.
5. The Manta or Pack Cover.
6. The Blind.

G. O. 13.

HEADQUARTERS PHILIPPINES DIVISION,

GENERAL ORDERS, No. 13. } MANILA, P. I., February 26, 1906.

I. At the monthly inspections and reviews by post commanders, wheel transportation and loaded pack trains will be paraded with the troops.

At all posts of this division having pack trains, a systematic course of instruction in packing for all line officers below the grade of field officers, will be commenced at once, and will be continued until all such officers are fully capable of instructing packmasters, cargadores and packers in their respective duties. Drills will be had twice each week at such time as may be designated by the post commander, and he will report the names of officers qualifying to these headquarters, excusing them from further attendance at such drill.

At least two enlisted men of every foot organization, and all mounted men of the cavalry and artillery, will receive as thorough a course in packing as practicable. Such men as show special aptness will be reported to the Chief Quartermaster of the Division.

The subjects of the setting up, changing and fitting the aparejo, the preparation and equalization of cargoes, and the maintaining of the animals in sound condition while on the march will be especially dwelt upon.

II. During this instruction a competent and energetic officer will be detailed by the post commander to have supervision over the drill, exercise, care and instruction of the pack trains while in garrison, and all officers are enjoined to do their part in bringing these trains up to the highest degree of efficiency and in maintaining them in that condition.

III. All pack trains when in garrison and not engaged in regular work sufficient to keep them in good condition will make practice marches of from five to ten miles per day, so as to keep the animals in hard muscular condition, and in order that daily examination may be made as to whether the "rigging" is properly fitted. (Any defects in the "rigging" or equipment should be noted and steps taken at once to remedy them.)

On these practice marches the men will be instructed in their duties, both in bivouac and in camp, and the animals will be trained.

Post commanders will be held responsible that the following instructions and regulations for the care of government transportation are thoroughly carried out, that pack trains receive necessary service and exercise to maintain them at the top notch of efficiency, and ready for active service.

IV. Care of Public Animals.

All animals should be carefully groomed at least once a day; in camp this should be done twice a day. All draft, riding or pack animals will be fed and watered regularly, the feet of the horses and mules examined and cleaned twice a day; they should be shod when necessary, the blacksmith being required in all cases to fit the shoe to the foot instead of trimming or rasping down the foot to make it fit the shoe.

Animals should be watered before being fed in the morning and evening, and also during the day.

In feeding, the greater portion should be given in the evening. Wagons are provided with feed boxes for draft animals, and pieces of canvas should be provided for use in feeding pack and riding animals.

The full allowance of salt should be fed twice a week. When animals eat the wagon bed or feed boxes, or lick one another's hide, it is certain they are not getting enough salt.

At night the trains should be parked and the animals tied to the wagons so that the grain may be fed to them in the feed box. Where a picket rope is used see that it is securely fastened, so as to hang about four feet from the ground, and that the halter is long enough to allow the animal to lie

down. If the animals arrive in camp in a heated condition they should be allowed to cool before feeding and watering.

In all cases where animals are suspected of being infected with contagious or infectious diseases, they will be promptly isolated.

Where surra has infected the animals at any place, the temperatures of all animals will be taken twice a week, and all having temperatures of 102° or over will be promptly isolated, and an examination made of their blood for surra parasite. A failure to find the parasite at one examination is not proof that the animal is free from surra. Several examinations may be necessary and on different days. Once a case of surra has been positively diagnosed with the microscope, prompt action under the provisions of paragraph 790, Army Regulations, will be taken, to prevent the spread of the disease and stamp it out. Brushes and currycombs which have been used on infected animals will not be again used on other animals. The soil of a stall occupied by an animal developing surra will be dug up to a depth of at least one foot, thoroughly saturated with a solution of chloride of lime and refilled with fresh dry earth.

All animals with their harness and equipment, will be kept under shelter when not actually in use. Each animal should have its own designated stall, which should be provided with a rack for the harness belonging to that particular animal.

V. Care of harness.

Harness will be examined daily and kept in repair. Note particularly if any stitches are broken; if any parts of the leather are worn thin, badly cracked or cut, and if any of the buckles, toggles, snaps, hames, chains, bits and rings are cracked or broken. Never permit harness to be thrown on the ground, as the mud and dirt on parts which rub against the skin of animals will cause abrasions and sores. Should a teamster or any other employee having public animals in charge, permit such animals to develop sore shoulders, sore backs or other abrasions, the result of carelessness in this respect, he should be discharged at once.

In having harness repaired, care should be taken that

knots are not made on that side of the leather which comes in contact with the skin of the animal. Harness will be taken apart, cleaned and oiled at least once a week, and whenever necessary, by reason of it becoming wet or muddy. Keep all leather free from grit, soft and pliable. To clean harness use a bucket, warm water, sponge, harness soap, harness dressing, neatsfoot oil and lamp-black; provide a rack to hang the harness on for cleaning, and wet the sponge in clean water, changing it as often as may be necessary, and pass it over the harness until the dirt becomes soft. After the harness has been thoroughly rinsed and sponged in clean warm water, the sponge should be rubbed on harness soap until a good lather is obtained and the leather given a good heavy rubbing until all dirt is removed, scraping with a thin piece of wood where necessary to remove the dirt.

After the harness is thoroughly clean, work up a thick lather, coat the leather with it and allow to dry without further rubbing; after the lather has been absorbed and the leather is dry, put on a light coat of the harness dressing, prepared as below, which should be applied with a perfectly clean sponge, without rubbing. The dressing should be kept in an air-tight vessel when not in use.

When the harness has not been cleaned for some time and is hard, or when being used for the first time, it will first be cleaned as above (omitting the harness dressing), and afterwards treated as follows: Take a full pint of neatsfoot oil for each single set of harness, pour it into a pan and mix with lampblack in the proportion of one teaspoonful to each pint of oil and stir this mixture thoroughly; it should then have a glossy black appearance; it should then be applied to the harness, while it is still damp, with a clean sponge free from grit and well rubbed in. Harness treated in this manner should not be used again for at least a day. After the leather is thoroughly dried the harness dressing should be applied.

Each teamster should have specially assigned to his care certain animals, with their harness, and no interchange of harness should be permitted.

In case any animal is suspected of having any contagious or infectious disease its harness will be disinfected in the following manner: Before being used on any other animal, the bits, buckles and all metal parts will be removed and subjected to boiling for thirty minutes or to a dry heat of about 220° *Fahrenheit* for about ten minutes; this can be accomplished by putting them in a closed Dutch oven, and building a fire under it, throwing live coals on the top, or by laying the articles on top of the live coals in the blacksmith's shop, care being taken not to fuse such parts as are fusible. The leather portions of the harness should be thoroughly washed with lukewarm water and soap and then soaked in a five per cent. solution of carbolic acid, or a solution of Tricresol or Creoline about one to one hundred parts of water for several hours; the harness should then be removed, rinsed, washed with soap, oiled and cleaned, as before described.

VI. Wagons.

Wagons in constant use will be greased at least once each day, the old grease being scraped off before the new grease is applied. All teamsters will be required to report at once any repairs necessary to their wagons, and any failure to do this will be a subject for discipline. Wagons will be inspected before going out and also on coming in, in order to ascertain if all tires are tight, axle nuts well screwed on, all bolts are in place and nothing broken about them. Every wagon train will carry a few spare parts, nuts, bolts, wrenches, so that minor repairs may be made at any time.

All persons in charge of wagons or pack trains, which pass through or stop over night at a garrison place or camp, will report to the quartermaster thereof, or if there be no quartermaster, to the commanding officer, the number of animals, teamsters, etc., and amount of forage or repairs required, making known their destination and applying for shelter for animals, wagons, pack saddles and personnel of the trains as the case may be.

List of articles to be carried on each wagon:

1 Ax, front of wagon,
2 Axle nuts, extra, in tool box,
1 Bucket, G- I. under rear of wagon,
½ Piece buckskin, in tool box,
1 Brush, horse, in tool box,
1 Comb, curry, in tool box,
2 Cans, grease, axle, in tool box,
2 Hames, extra, under wagon,
1 Lantern, in bucket,
Nails, horseshoe, extra, in tool box,
3 Open links, in tool box,
1 Pole, wagon, extra, on side of wagon,
1 Pickax, on side of wagon,
1 Reach, extra, on side of wagon,
150 Feet, rope, ⅜ or ½ inch, on side of wagon,
1 Spade, on side of wagon,
3 Straps, hame, in tool box,
Straps, extra, in tool box,
3 Strings, hame, in tool box,
1 Shoe for each animal, previously fitted to hoof, in tool box,
2 Singletrees, under wagon,
1 Doubletree, under wagon,
1 Wrench, wagon, in tool box.

Receipt for Waterproofing Canvas Covers on Hospital Ambulances.

Make a mixture of the following ingredients: To each gallon of raw linseed oil add 12 ounces of beeswax, 1 pound of white lead, and 12 ounces of common resin. Now boil this mixture, stirring it at the same time, and apply it while warm to the upper side of the canvas. Be sure to wet the canvas with a sponge on the under side before applying this mixture, or sizing.

VII. Regulations for Pack Train Service in the Philippines Division.

Each train should consist of the following:
50 Pack mules,
14 Riding mules,
1 Bell animal,
With proper equipments for all animals.

Employees.

1 Packmaster,
1 Cargador,
1 Blacksmith,
1 Cook,
10 Packers.

Should the number of pack animals be permanently reduced below fifty, the number of packers will be reduced so that there will not be more than one packer for each five pack animals.

No pack mules will be used as draft animals.

Whenever there are two or more trains stationed at one post, recommendations may be made for one assistant chief packer.

The standard load for pack animals in this division is two hundred pounds per animal.

The Quartermaster.

The quartermaster accountable for pack trains will be responsible for their proper maintenance and equipment, and for the discipline, proper organization and the instruction of all employees in their duties.

When pack trains shall be assigned to a station, the quartermaster accountable will provide a corral and supply material and conveniences for placing cargo and "rigging." Platforms should be provided to keep the "rigging" and cargo off the ground.

While in garrison, the officer in charge of pack trains, or in his absence, the assistant chief packer or packmaster, will procure from the quartermaster of the post suitable loads wherewith to exercise the animals of the respective trains.

These requirements are necessary for the purpose of training the animals and for the instruction of the men, and have for their object the daily simulation of service conditions.

It will be the duty of the quartermaster to make inspections of all pack trains for which he is accountable, at least once a week.

He will also make thorough inspections of pack trains prior to their being dispatched on detached service, and will again inspect such trains on return from detached service.

On the return of the pack trains to their proper posts, from detached service, the officer in charge of pack trains will report to the quartermaster of the post any inattention to duty of any member of such trains, and in all cases of abuse of animals or neglect of duty, he will report employees responsible for same, also the condition of the animals in the respective trains, and condition of their bodies, whether sound or otherwise.

It will be the duty of the quartermaster to furnish to each packmaster a small blank book to be known as the "Property Book." This book will contain a list of all public property of the pack train, including the aparejo complete, together with all spare parts as follows:

1st, the body; *2d*, the crupper; *3d*, the cover or "sobrejalma;" *4th*, the cincha; *5th*, the corona or saddle pad (above referred to as the "rigging"); *6th*, the aparejo blanket; *7th*, the lash rope with cincha; *8th*, the sling sope; *9th*, the lair rope; *10th*, the pack cover or "manta."

The number of extra lash ropes without cincha, sling and lair ropes, and pack covers.

The number of cargo, "rigging" and feed covers.

The number of saddles and bridles, blankets, blinds and head halters, with shanks and snaps. Bell with snap for the bell animal, hobble, whether common or "Snow" for bell animal.

The number of tool sacks, moss or "hay pads," clothes or 'war bags," cargador's box with "kit," blacksmith's mule shoe boxes (2) with "kit." The tools in the "kits" should be enumerated.

Picket line with iron pins, if any.

The number of kitchen or "mess boxes," and all "mess" and cooking utensils enumerated.

Also a list of material for needed repairs.

A duplicate of this book will be kept in the office of the quartermaster.

On detached service the officer in charge in the field will be called upon to furnish a memorandum receipt to the post quartermaster for property of the pack trains sent out in his charge.

In the property book will be kept a descriptive list of all animals of the train, giving the number and name of each pack animal according to sex, age, color, height, weight and marks or blemishes, not including aparejo or pack saddle marks. In this list the bell animal shall be included. The corona number of each animal should be given, from one to fifty. The use of corona numbers above that figure will not be permitted. If pack animals in excess of that number are in the train they will be designated as "extras."

In this same book will be recorded the personnel of the pack train, giving the names of the packmaster, cargador, blacksmith, cook and packers, and showing length of service with the pack train. This book shall also state the length of service of each employee, when and where first employed, and in what capacity. It shall also show in what States, Territories or foreign possessions the men have had former experience as packers. Expert packers, suitable for packmasters, will be reported to the chief quartermaster.

A separate record book or time book will be kept, showing the roster by which members of the pack trains report for duty.

The post quartermaster or acting quartermaster shall require a daily morning report of each packmaster.

The morning report will state the hours of daily exercise, and the distance traveled; of what the cargo was composed, the average weight of the load per pack animal; the condition of the animals and their bodies; the condition of the rigging and equipments; the hours of watering, herding, grooming and feeding; the amount of grain fed per animal; the amount of straw for bedding, if any; repairs to rigging,

etc. Also the number of rations per train and the number of men for whom furnished; any accidents happening to men or animals, and cause thereof; the date of employment of men and in what capacity; and any disobedience of orders on the part of members of the train, etc.

In connection with the morning report there should be a space for remarks when the train is in the field, in which should be given a brief account of the country passed over, the distance traveled each day, the condition of the country as to wood, water, grass, and, in short, everything affecting the movements of the pack trains, together with any incidents of note that may have occurred.

The acting quartermaster of expeditions in the field will have the same responsibility for pack trains as the post quartermaster has in garrison.

He shall arrive in camp or bivouac in time to have the parking ground selected so that the train will not be kept loaded an unnecessary moment after its arrival.

The quartermaster will instruct the chief packer where to park his trains, which will be in as convenient a manner as the nature of the ground will permit. The highest ground will be given to the cargo, the next highest to the "rigging," and the next highest to the picket line.

All cargo, "rigging," etc., will be placed in as orderly a manner as possible.

Duties of Assistant Chief Packer.

The duties of the assistant chief packer will be to see that all packmasters and other employees are thoroughly instructed in their duties and competent to perform all the duties devolving upon them in connection with the pack service.

He will be held responsible for the condition of the animals and the perfect management and discipline of the train under his charge.

He will require packmasters to maintain supervision over the care of the animals and property, and hold them strictly accountable therefor.

During travel, whether by day or night, the assistant chief packer, or the packmaster on detached service, will ride in advance of the train or trains, to gait the rate of travel and to look out for bad or dangerous places.

The assistant chief packer will hold packmasters accountable for "squaring" of side packs by tying the corners of sacks together before "lairing" up. By this precaution sacks of flour, sugar, coffee, beans, rice, grain, etc., will be prevented from bursting, should they be dropped on the ground through negligence or carelessness of packers.

He will hold packmasters responsible for the proper "forming of cargo" in the tying of animals to their respective loads, and for the expeditious preparation of the train for the day's travel.

He will hold the packmasters responsible that animals are properly trained to come to "rigging" (aparejos), technically called "run to rigging." This will be done in the morning, after the night's herd, also in the evening. This practice must be had daily in order to expedite the placing of the aparejos on the animals and the adjusting of their respective loads.

Packmasters will be instructed to place packers in such manner as to give safety to animals along the trail in the neighborhood of bad or dangerous places. Similar precautions will be taken in crossing streams, either by fording or swimming, and in each case there will be a thorough examination made of the stream before pack trains are permitted to enter it, and also necessary men will be stationed on lower side to keep animals well up, to avoid accidents.

The assistant chief packer, or packmaster on detached service, will report every evening to the quartermaster for instructions for the next day's travel, and will have the train in readiness promptly at the time specified.

Duties of the Packmaster.

The packmaster will be held accountable for the proper and complete equipment of his train and the management and discipline thereof.

A lack of thorough knowledge and understanding of the art of "setting up" an aparejo will be a disqualification for this position.

The packmaster, whether in garrison or in the field, will cause animals in their trains to be brought to "rigging" in the evening, while there is light, if possible, and will then verify the train by count. The animals will then at once be thoroughly groomed, and particular care will always be given to the parts where aparejos, cruppers and cinchas come in contact with the skin. Careful attention and treatment will always be given to "bunches" that may have arisen during the day's work, however small.

The packmaster will assist, and instruct, when necessary, the cargador, in readjusting the filling of the aparejos, in such manner as will result in preventing "bunches" or sore places and in keeping the animal sound.

He will exercise supervision over packers at all times and see that they give due attention to the animals' packs and that none fall off or become disarranged during the travel. When found necessary the cargo will be readjusted. Should an animal show signs of weakness it should be relieved of a portion or all of its load.

It will be the duty of the packmaster to inspect, after each day's travel, the condition of the animals' bodies. He will observe the condition of the coronas, as to cleanliness, when in bivouac, and will cause all wet or damp canvas or blankets to be spread out and dried, provided the opportunity offers.

It will be the duty of the packmaster to count all "rigging" and report to his immediate superior anything found missing, and see that the following rules are enforced:

In bivouac all saddles, bridles and blankets will be placed on the cargo and the whole will be covered by canvas and securely tied down.

In garrison the animals will be daily "run to rigging" between the hours of seven and eleven. Before being "run to rigging" all animals will be properly watered. Between the hours of four and five in the evening, they will be watered, whether at stables, or herded, or at picket line.

During travel the animals will be watered as opportunity presents itself, and in bivouac they will be watered before being taken to herd. They will also be watered before being "run to rigging" in the evening.

The watering and feeding of the animals of the trains in all cases will be supervised by the packmaster.

When tied to picket line the animals will be fed on feed covers provided for that purpose, if grain is available.

Grooming will be regularly practiced every day, Sundays included, between the hours of four and five, while animals are at "rigging." They will be taken singly therefrom for this purpose, in order that the condition of the animals' backs can be noted. Should "bunches" arise during the day's travel prompt attention must be given.

No grain will be fed to pack animals in the morning, as experience shows that grain, especially, tends to sour in the animal's stomach, from the heat of travel.

During practice marches it will be found advantageous if the animals can have an hour's grazing in the early morning before being "run to rigging."

When pack trains are herded it will be the duty of the packmaster to assign a suitable number of packers as guard for the animals.

Care should be taken during halts to avoid the necessity of animals of the train standing in the immediate neighborhood of dangerous places.

In garrison, if stables are provided, the wagons and harness, and necessary implements for keeping stables clean and in good condition, should be procured from the post quartermaster.

The rigging should be kept clean. The leather parts will be frequently washed with sponge and lukewarm water and soap as described for harness, the leather softened and kept pliable with neatsfoot oil. Blankets and canvas should be kept clean and free from mud and grit; they should never be thrown on the ground. Pack saddles of all descriptions will be habitually kept under cover.

General Instructions Governing Packmasters and Their Duties.

The packmaster will be held personally responsible for the safe keeping and delivery of his cargo.

In case of any loss or damage to cargo, the quartermaster may, at his discretion, stop value of loss against the pay of the packmaster or against that of any packer found responsible, pending action by a board of survey.

Packmasters should have authority for granting a few hours' leave of absence to employees of the train in case of application by packers. Should a packer desire a leave of absence extending over twelve hours or more he should be required to make application in writing through his packmaster and assistant chief packer to the quartermaster, giving his name, position and necessity for the leave. Absence without permission for the period of twenty-four hours may be considered cause for discharge.

Packers found in any way maltreating the animals under their care in such a way as to impair their usefulness and gentleness will be discharged, as provided by law. This rule will be rigidly enforced with all members of the pack service.

Duties of Cargadores.

The cargador must, under the supervision of the packmaster, set up the "rigging."

He will be expected to keep the animals' bodies sound, and failure to do this will prove his unfitness for the position.

He must attend to needed repairs to aparejos and equipment, supplying himself, through the quartermaster, with suitable cargador's "kit" and material for this purpose.

He will see that cargo, such as tentage, field rolls, etc., which may be ruined by lair ropes, or animals sweating, or by rain, is covered by manta.

He will be responsible for making up all cargo, equalizing the packs and loading the animals according to their strength and condition. He will keep a watch on animals and packs while traveling, and on packers, to see that they

attend to their duties, and will promptly report any inattention or disobedience of orders to the packmaster.

The cagador will cause the cargo "rigging" and picket line to be placed as indicated by the packmaster, and will take charge of the train in the absence of the packmaster.

He will keep a memorandum of all cargo received and to whom issued, together with dates, marking and tagging packages when necessary.

In bivouac he will see that all halter shanks are gathered and placed on "rigging," and all blinds placed between the two last "riggings," and all saddles, bridles and blankets placed on cargo before being covered up.

He will be responsible that all aparejos are marked with the number of the animal's respective corona, and that all coronas are kept clean.

Duties of the Blacksmith.

The blacksmith will be provided with the blacksmith's field kit; will keep on hand for field service two hundred shoes properly fitted, together with the necessary number of nails; he will also be equipped with other requisites for properly shoeing the train. He will fit and shoe all animals of the train, and must have a thorough knowledge of the approved methods of fitting shoes, and of the intelligent care of the frog.

He will, when required, give assistance in packing, and while the train is being packed his duties are to keep the animals close to the bell animal, keeping correct count of the animals as they are turned loose, reporting any accident promptly to the packmaster or cargador.

While traveling his duties are to ride up behind, keeping watch on the feet of the animals, so that he may know how many shoes have been slipped during travel.

He will call attention of packers to any load that may need attention.

Duties of the Packers.

Packers must have a thorough knowledge of the "diamond hitch" and all other hitches used in packing, for the purpose of securing the loads, and must be able to effect a proper adjustment of the loads.

Inattention to the loads, or permitting them to fall off the animal, will be considered a cause for discharge.

No reading matter will be taken by packers on herd to distract their attention from the care and watchfulness of the animals, that they may not stray off or stampede.

Duties of the Cook.

The cook will have his meals in readiness at the time specified by the packmaster, and must have knowledge of the economical preparation of the prescribed ration.

He must closely and compactly stow the rations and mess utensils in the boxes in such manner that their weight will be equally distributed, causing the packs to ride evenly. Carrying heavy or unnecessary utensils on the march is prohibited. When kitchen utensils are ready to load he will mount his animal and keep the animals of the train rounded up.

At the call "Bell," he will untie the bell animal and lead out in the direction indicated, gaiting the animal as directed by the packmaster, and will maintain the proper distance in the lead, noting whether the gait be too fast or too slow, and reporting any accident.

The fact that certain instructions are herein given relative to the duties specifically prescribed for each employee shall in no wise be construed as relieving any employee from responsibility for the general welfare of the train and of the interests of the service to the utmost extent of his ability in every sense, nor does the specific assignment to certain duties imply that there shall exist or be permitted in the slightest degree any lack of concert between employees in the discharge of their duties.

By command of Major General Wood:

GEO. ANDREWS,
Colonel, Military Secretary.

THE STOPPING POWER OF A BULLET.

By First Lieutenant G. C. LEWIS, First Infantry.

IN a recent article of the Cavalry Journal upon the relative stopping powers of the .38 and .45 Colt's revolvers, the interesting suggestion was made that it might be still possible to utilize the .38 issue pistol in action, without hopelessly handicapping the user, by changing the character of the ammunition to give a lower muzzle velocity.

In view of the acknowledged danger of attempting self-defense with that weapon as at present issued and the large expense involved in the proposed equipment of the service with another pistol of larger caliber, any alterations which will make the weapon reasonably efficient by a change of ammunition is deserving of investigation.

Since the object of the proposed decrease of muzzle velocity for the .38 ammunition is to increase the shocking effect or "man-stopping power" of the bullet, it is desirable to review the factors upon which this stopping power depends.

The gauge of the stopping power is the number of foot pounds of destructive energy expended by the bullet upon the animal tissues during its passage through the target. The test of relative penetration is a most misleading criterion of bullet energy.

The fact that a 100 foot pound blow expended upon the femur would not have the same effect as if expended upon the spine, and also the further fact that blows of the same force and location will have different effects upon individuals of different constitutional characteristics—savages or civilized men—may be ignored in the comparison of stopping effects of two bullets, for the chances of striking sensitive portions are equal for the two bullets in the long run. Great care is

necessary in individual cases of wounds cited in comparisons, however, to avoid being misled by slight variations of wounds near nerve centers or by peculiarities of individual resistance capacity.

For the purpose of review, however, the human body may be safely regarded as a compound target, composed of substances of different degrees of hardness, density, tensile strength, etc., bones, tendons, muscles and organs.

The destructive work (F) on the target, is then given by the equation.

$F = \frac{1}{2} MV^2 - \frac{1}{2} mv^2$ where

M=mass of bullet at entrance.

V=velocity at entrance.

m=mass at exit.

v=velocity at exit.

Two facts are at once apparent: (*a*) The stopping power can never be in excess of the muzzle energy of the projectile and (*b*) the decreasing of the velocity can by no possibility increase the stopping power of bullets of equal mass, the velocity of which is such that they remain lodged in the target, since the minus term of the equation is zero.

Since approximately half of the wounds made by the .38 pistol retain the bullet in the body, the irrationality of the proposition of still further reducing the velocity to increase the stopping power is evident. A decrease would simply insure that all bullets remained in the body whether they struck hard or soft tissues, while the failure to penetrate dense bony structures would increase, since it is impossible to adjust energy and penetration in a compound target like the human body, to insure equal penetration at any point. The ensuing surgical complications to the bolero, attendant upon embedded bullets might be a source of consolation to the relatives of the unfortunate soldier equipped with low velocity .38 pistols, but it is not a sentiment calculated to instill confidence in the soul of a recruit in a bolo rush.

Since in fifty per cent. of the wounds with .38 pistols, the embedded bullet indicates that all the energy retained therein at the given range had been delivered, and this is still inad-

equate, it is interesting to notice the quantity of the muzzle energy of different military weapons, bearing in mind that retained energy varies with the square of the velocity, and that in light pistol balls the velocity drops with increase in range in the most surprising manner.

WEAPON	Weight of Bullet	Velocity at 50 Feet	Ft. Pounds at 50 Feet	Muzzle Velocity	Ft. Pounds at Muzzle
303 British	215	1960	1833	.....	.....
30 Krag	220	1960	1880	.....	.....
30 U. S. Springfield	220	2250	2488	.....	.....
45-405 Springfield	405	1286	1652	.....	.....
45-500 U. S.	500	1179	1542	.....	.....
49-90 Winchester	300	1480	1457	.....	.....
45 Colt's Automatic	200	.....	.....	900	361
45 Colt's	255	.....	.....	801	365
38 U. S. Colt's	150 156	.....	.....	723*	175 181
Colt's Special Military	167	.....	.....	800	238
22 Winchester Single Shot	45	1481	218	.....	.....
25-20 Winchester	86	1300	323	.....	.....
32-20 Winchester, H. V.	115	1575	633	.....	.....
32 Winchester	115	1177	352	.....	.....
38 S. & W	146	.....	.....	620	125

*Velocity from report of Chief of Ordnance, 1891.

One thing is very striking in the foregoing table. The change from the 500 to 405 Springfield bullet, then to the Krag, and then to the .30 Springfield, has been uniformly in the direction of increasing the muzzle energy and the potential destructiveness of the rifle, amounting to a total of over 50 per cent., besides doubling the danger zones. The change in the pistol has resulted in a decrease of 190 foot pounds, or about 55 per cent., without any compensating gain in trajectory or elsewhere.

The utter inadequacy of the .38 service pistol is brought out glaringly by comparison of its muzzle energy with the small sporting calibers. Even the most sanguine anti-imperialist should pause at the prospect of an argument with an energetic juramentado conducted with a .22 single shot or a .32 Winchester, and yet the .22 approximately equals and the .32 Winchester is over twice as strong as the issue .38 revolver cartridge. The gist of the shortcomings of the .38 and of the small caliber automatic pistols is right in the foregoing table—they are simply short of steam when they start

out. The .45 at least has the goods if the delivery can be made.

While the highest percentage, 100 per cent., of the energy of impact is expended on the target in cases where the sectional area of the bullet is so adjusted to the depth and resistance of the target, that the bullet remains imbedded in the target, yet the *amount* of destructive work may be still further increased within certain limits by an increase of the energy of impact causing complete penetration though the *percentage* of effective energy is diminished. The misconception prevalent on this point, to the effect that a bullet which breaks through the target does less destructive work than one which almost breaks out, but does lodge, is due to the popular confusion of *amount* and *percentage*. Thus an increase of 41 per cent. in the velocity of a bullet having barely energy for complete perforation, will increase the energy in the projectile at impact 100 per cent., but may add only 10 per cent. to the foot pounds of destructive work done on the tissues, the remaining 90 per cent. of the increase going towards the making of a long hole in the atmosphere on the rear side of the target. Yet the percentage of efficiency of the imbedded or barely perforating bullet is 100 per cent., and of the other only 62½ per cent.

The destructive energy of a given bullet upon a given target after the energy of impact is sufficient to give clear perforation may be increased in two ways:

First, by increasing the diameter of the bullet's path and consequently the quantity of matter to be displaced in its passage, and secondly, by increasing the energy of impact by raising the mass or velocity while keeping the same diameter, with the object of doing more work upon the original quantity of displaced matter, by displacing it at a higher average rate. Greater diameter of bullet's path may be secured either by increasing the calibre or by making the bullet of soft material which will expand on contact with a target. For any given thickness and density of target, and for any given energy of impact, a bullet of correct diameter can be found which will give the maximum efficiency.

The problem of an adequate pistol can be settled by determining the average shock in the foot pounds required to knock out a man, and the selection of a caliber or a mushroom bullet, or a combination of the two, which will deliver the energy without wasting any on the atmosphere behind the target. This is undoubtedly the correct way of securing the desired knock out blow, for the attempt to secure the same results by juggling with velocities and bullet masses, introduces the question of (1) critical velocities of contusion, rupture and explosion, which are variables, and functions of the diameter of projectile; (2) shape of projectile head; (3) target tissue, as well as (4) the mere velocity.

Destructive energy applied by bullets in cases already giving complete perforation is increased rather more rapidly than the square of the diameter, the bullet points being similar. The diameter of the .38 is .357 inch, and of the .45 is .454. Thus, supposing the .38, with an energy of impact at 20 yards of 150 foot pounds, to strike a target with a resistance of 127 foot pounds, to bullets of that diameter, which it perforates without deformation. It would then expend some 25 foot pounds in the wind. But the .45 at about the 20-yard point on its trajectory would have an energy of impact of about 300 foot pounds and would, with the same target, expend 206 foot pounds force upon it, as it would encounter resistance in proportion to the square of its diameter. It is thus evident that perforations and consequent loss of energy behind the target are less likely to occur in the case of the .45 than in the .38, in the ratio of 5 to 8. For identical velocities the .45 has 60 per cent. greater stopping power on identical targets than the .38. This does not take into consideration the deformation of the bullet. The .45 lends itself more readily to the mushroom action, in consequence of its large diameter, and its remaining energy at ranges over 10 yards is about 250 per cent. of that of the .38, so that there is a large reserve for advantageous mushroom action.

It may be said appropos of the doubts expressed of the stopping power of the long Colt New Service .45 cartridges, that the .45 pure lead bullets of the hollow-pointed man-stopping Webley model, may be guaranteed to deliver to the

target all the energy that the average man can stand the recoil of in his pistol hand. No great advantage in mushrooming the present .38 cartridge could be obtained, as the energy available is too small.

This is also the reason for the failure of the Mauser, Luger and other small caliber automatic pistols. The light eighty-six grain bullet loses its velocity very rapidly and simply lacks energy to inflict a stopping blow even when the bullet does expand, which it does not always do on soft tissue, owing to the slight resistance offered a bullet of such small cross-section.

The second method of increasing the destructive energy delivered to the target by a bullet having already sufficient energy of impact to give clear perforation, is to still further increase the velocity.

The increase of destructive work is directly proportional to the square of the velocity with identical underformed bullets, as long as the bullet does not make its exit from the target. After a velocity sufficient for clear perforation is reached the destructive work still continues to increase, but at a much lower and variable rate, with well defined points of change of rate of increase at certain velocities, called the critical velocities of contusion, rupture and explosion, bounding zones of fair uniformity. As previously stated, these critical velocities are not constant, but depend on the diameter of projectile, shape of points, character of its material, and on the substance of the target, and a change in any of these four factors will alter the critical points. The mass or energy of the bullet only affects the duration of the zone. In animal tissue these effects are strongly marked and require careful consideration. Consider the effects of a gradual increase of velocity with identical bullets and targets.

The critical velocity of contusion is manifested in spent balls, and lies so low that it is not accompanied by perforation, so that the efficiency of one hundred per cent. is continued beyond it until perforation is had. Should perforation occur in the zone of rupture, the destructive energy continues to increase, but at a much slower though uniform rate,

until the critical point of rupture is reached, beyond which the rate of increase is so small that the shock energy may appear to stand still until the critical velocity of explosion is reached, when the ratio jumps to a higher point than in the zone of rupture.



EXPLOSIVE EFFECTS.

Range fifty yards, velocity extreme. Bullet entered three inches above elbow. Wound of exit two inches by four inches, and of highly explosive character, showing free comminution of bone, sharp radiation of stellate lines of fracture and the propulsion of bone fragments.

The efficiency of one hundred per cent. will continue until perforation, which may take place in any zone, and a single target of sufficient depth (a horse lengthwise or a row of men) may show all zones and critical velocities.

The existence of these critical velocities of rupture and of explosion may be well illustrated in the following cuts

mostly taken from "Makins Boer War." The first shows the effect upon the bone of velocity higher than that of explosion. The range is about fifty yards and velocity is extreme, and the bone has been broken up for many inches,



FIGURE 1.

Gunshot injury of the lower third, right femur, by the .30 caliber German silver, jacketed projectile, with the velocity common at 1,200 yards. The projectile perforated the anterior face of the bone about its middle, immediately above the upper margin of the articular surface, making a clean-out perforation.



FIGURE 2.
A posterior view of Figure 1.

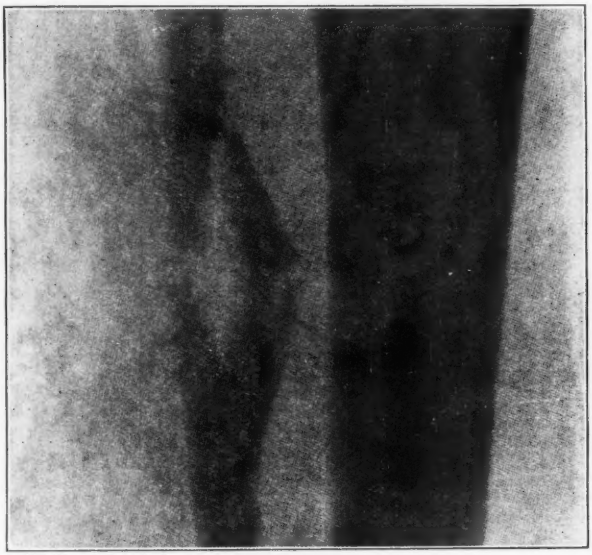
CLEAR PERFORATION EFFECTS.

and the tissue destroyed where it could not possibly have come in immediate contact with the bullet.

The second shows a clean perforation without explosive action and but little rupture at range of over 1000 yards, and a velocity 900 for that caliber.

The third shows a ruptured low velocity wound at probably less than 500 feet per second at extreme ranges. The critical velocity of rupture is very low with small caliber bullets and such cases are usually ricochets or key-holed bullets giving a larger area of impact.

German experiments on human cadavers and horse carcasses with the Mannlicher rifle having similar character to

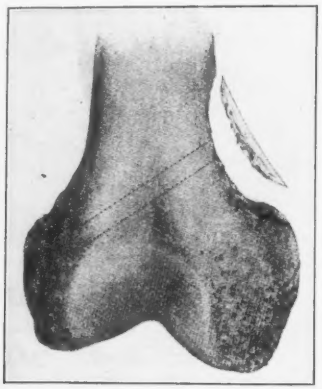


RUPTURED EFFECTS.

Long range, low velocity wound of 8 mm. bullet which entered base foremost and lodged in calf. Two well marked transverse fissures extend from point struck, showing ruptured effect in displacing large fragments, as distinguished from explosive action.

our own Krag, indicate that the explosive zone extends from the rifle to about 220 or 400 yards, according to tissue, and that from that point to about 3200 yards clean perforation with slight shock may be expected, while beyond 3200 yards the velocity falls below the critical point of rupture for that caliber, and ruptured and torn wounds result. The cause of these effects is not well understood, but the best explanation is as follows:

At the very lowest velocities the cohesion of the particles of tissue at the point of impact is so great with regard to the rate of application of the bullet's force, that most of the energy is distributed to a large adjacent area without breaking the tissues, resulting in a large bruised and contused zone without penetration, frequently of a most serious nature. As the velocity is increased the critical point of contusion is reached at which the rate of application of force is higher than the tissue cohesion, and penetration results. This is below 100 feet per second, with the .30 caliber point on, but may



RUPTURED EFFECTS.

Long range, very low velocity. Bullet perforated bone along dotted lines, breaking loose a large fragment at exit. Ruptured effect producing large fragments without explosive propulsion of detached pieces.

be much higher with larger caliber, and ricochets or keyholed bullets.

Suppose the velocity to be increased a couple of hundred feet more until the penetration is sufficient barely for perforation.

At these low velocities, the cohesions of the particles of tissue in the path of the bullet is so great with regard to velocity of the bullet, that a tearing and racking strain is given to neighboring tissue by such particles, before they are broken apart and displaced, and thus give a heavy shock.

As the velocity is increased, this shock will increase at a comparatively high rate until a second critical point is reached. At that point, the critical velocity of rupture, the cohesion of the tissue is not sufficient to stand the strain between the suddenly acquired velocity of the particles in the bullet path and the inertia of the adjacent tissue particles, and a clean shearing or punch action results, without as great a displacement of tissue as at lower velocities. When the velocity of explosion is reached, the particles displaced by the bullet, and possibly those affected by the rotary action, acquire

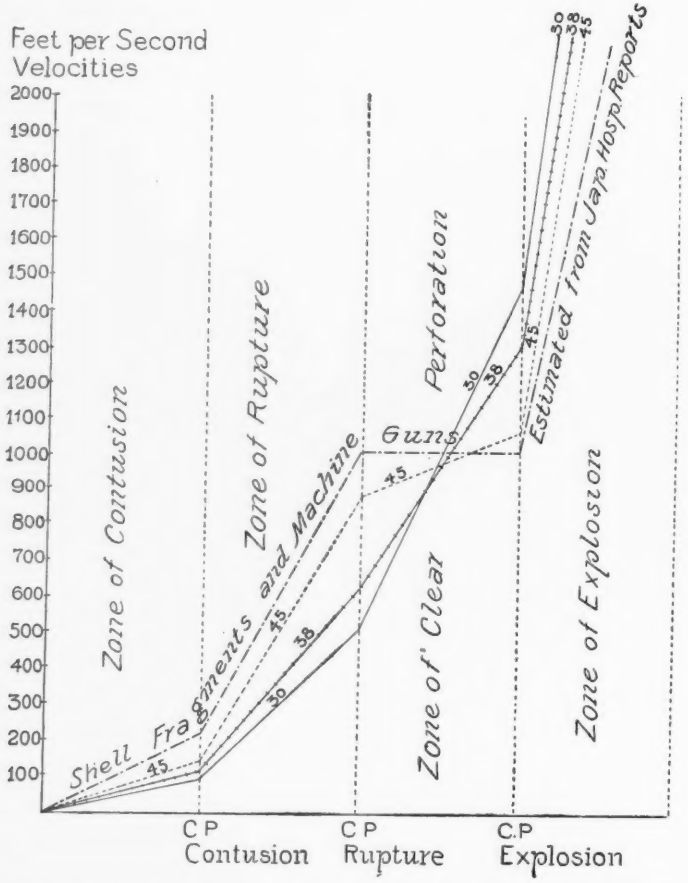


EXPLOSIVE EFFECTS.

"Explosive" wounds of legs. Large irregular entry (1x¾ in.) outer surface left leg. First exit (2 inches) roughly circular, inner surface left leg. Second entry wound produced by bone and tissue fragments driven out of left leg, very large and irregular (5x3½ inches). Measurements eight days after injury. Right leg subsequently amputated, though not struck by bullet.

themselves destructive velocities, just as a ball struck by a bat, and fly out in all directions, destroying the adjacent tissues. A hydraulic action resulting from the incompressibility of liquids is also mentioned by some authorities as a possible explanation of explosive action in animal tissue. The critical velocity of explosion tends to become lower and that of rupture to become higher for any particular tissue as the caliber is increased, reducing the zone of clean perforation to the vanishing point for largest calibers. Thus, as illustrated in the above diagram, the explosive velocity for the .30 caliber

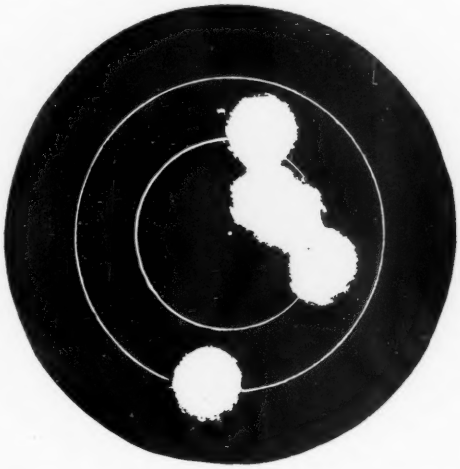
appears to be about 1450 feet; but explosive action with the Springfield 45–405 and Winchester 45–90 have been noted as well below 1200 feet, and the ordinary 45 Colt's at 800



Curves showing approximate relation of velocities and caliber of undeformed projectiles to the zones of contusion, rupture, clear perforation and explosion in targets of animal tissue.

feet still gives ruptured effects, while the .30 caliber gives ruptured effects only below 500 feet, unless there is increased surface by key-holing, etc. If several panes of glass instead

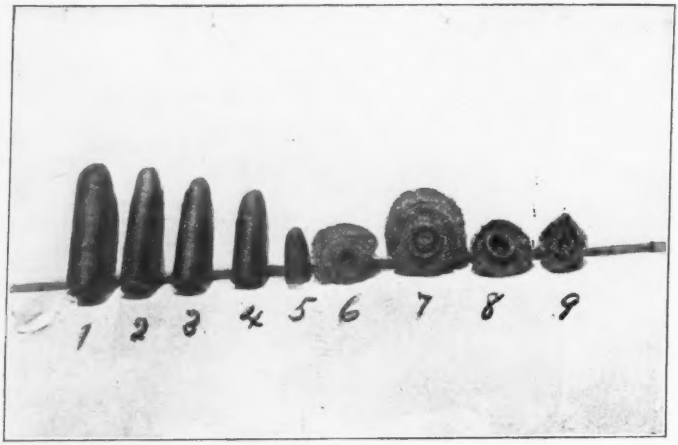
of a single pane be used in the experiment cited in the previous issue in support of low velocity .38 bullets, the effect of the service .30 and gallery .30 bullets will be found to give no exception to this law. The explosive effect of the service .30 on such a target at close ranges is simply annihilating. Moreover, deductions concerning stopping power based on effects on a glass target are objectionable because of the great difference between the critical velocities of animal tissue and such a brittle material. The zones for the .38 would appear to lie between those of the .30 and .45.



Score of forty-nine (twenty yards), by Lieutenant R. H. Sayre, New York. Colt New Service .45 revolver, Eley ammunition, man-stopper bullet. (From *Shooting and Fishing.*)

We have seen that it is useless to hope for results in shocking power of the .38 by decreasing the velocity, since that would result in further loss of its already meager striking energy and simply aggravate its principle source of weakness. This loss may be offset by increasing the mass of the bullet, but the capacity of the cartridge chamber and the increased rate of rotation for long projectiles and consequent stripping effect on soft bullets, place a positive limit on the lead which may be added to a pistol ball of given diameter. The Ideal Tables place 167 grains as the highest

weight practicable for an uncased pistol bullet of .357 caliber. Supposing, however, that an addition of twenty-five grains to the 150-grain bullet, was found possible, without loss of accuracy, a reduction of not exceeding forty feet in velocity could be made in the muzzle velocity without also reducing the



(1) Forty-five caliber (.454) cartridge, 255 grains lead, smokeless, 800 feet per second for Colt New Service Revolver.

(2) Thirty-eight caliber (.357) special military cartridge, 158 grains lead and tin alloy, smokeless, 800 feet per second velocity.

(3) Thirty-eight caliber (.357) issue cartridge, 150 grains lead and tin alloy, smokeless, 723 feet per second.

(4) Thirty-eight caliber (.357) Smith & Wesson, 146 grains lead and tin alloy, smokeless, 620 feet per second.

(5) Issue bullet, undeformed after lodging in hog carcass. Energy delivered in target 170 foot pounds.

(6) Forty-five caliber, pure lead, "man stopping" bullet, lodged in same carcass. Energy delivered in target 360 foot pounds.

(7) Same as 6. Traversed carcass lengthwise and lodged against pelvic bones, which were shattered. Energy delivered in target, 360 foot pounds.

(8) Same as 6. Passed through hog skull, neck and throat and lodged under skin of abdomen. Energy delivered in target, 360 foot pounds.

(9) Same as 6. Lodged in fourth elm plank, each 1¼ inch. Metal of point mushroomed until in rear of base.

muzzle energy. Further, any alterations in velocity of the .357 bullet must take into consideration the critical velocities of that caliber. Its critical point of rupture is about 600 feet, so that any increase of velocity will have the wide and profitless zone of clear perforation to pass before any explosive

action is reached, or else the critical velocity of rupture must be raised by increasing the diameter of the bullet by mushrooming. It might be possible, theoretically, to increase the shocking effect by increasing the velocity, but the loss of gas around the cylinder places a tremendous handicap on velocity in a revolver. The cartridge already fills the chamber and but little increase could be made; but some advance might be gained in that direction by using a pure lead, half-jacketed bullet with as much smokeless powder as the gun will stand.

Costly metal-jacketed ammunition would, however, soon eat up any saving made in not re-arming with proper weapons.

There are two valid arguments against the reduction of velocity of the .38 bullet. The first is that reduction of velocity, coupled with increase of mass, to maintain a *constant energy* of impact does not reduce penetration nor perforation wastage, unless the reduction is of sufficient degree to pass from a zone of lower to a zone of higher ratio of shock absorption. The velocity of impact, at target ranges of the .38, is already within the zone of rupture, and reducing velocity reduces mushrooming.

The second argument is, that the experiment of lower velocity has been made in the .38 Smith & Wesson and .38 Smith & Wesson short, having a velocity of 623 feet. The lists of resentful convalescents in the police wards of the municipal hospitals are eloquent of the futility of the change.

The plain truth is that the .38, conceived in a spasm of humanitarianism, designed by a Hague peace conference as an initial step in disarmament, required to be carried in a holster, which is a source of satisfaction to only the juramentado and the anti-imperialist, has proven a bloody trial to all troops equipped with it, and the sooner this cross-bred firearm and missionary tract is sent to the scrap heap the better for all concerned, except the juramentado aforesaid.

It is to be feared that the cowboy with his file is not a very safe guide toward the proper velocity for the .45. The short barreled Colt's .45 did not begin to gain popularity until the town marshals began to make the holster gun an

object of legal attention. Certainly no increase in stopping power is to be expected from cutting down the barrel to reduce the velocity, as clean-cut perforations are not made even at the muzzle velocity, as its whole trajectory is below the critical velocity of rupture for the caliber.

A decrease of velocity with a compensating increase of mass to keep up the energy, therefore, has nothing to gain. An increase of velocity would carry the bullet into the zone of clear perforation and low proportional gain of shock and a decrease in velocity without compensating the mass, would simply reduce the energy and consequently the potential efficiency, and while the .45 is powerful, it has no power to waste. In its last analysis, the argument for the reduction of velocity of the .45 would appear to be based on no more secure foundation than the fact that its bullets usually go clear through a man at close ranges, and the popular misconception of amount and percentage of shock in imbedded and perforating bullets, ignoring the principle of critical velocities.

The 45–40–255 cartridge with the seven and one-half inch barrel was the standard cowboy weapon and peacemaker. The record of instantaneous stops of American bad men and knife-wielding Greasers, can hardly be equalled by any other weapon, while the army records give ample evidence of the efficiency of the stopping power of the large caliber.

Any increase in shock of the .45 must, therefore, be sought in increased bullet diameter, and the most pertinent suggestion would be that the man-stopping, soft pure lead bullet be adopted in order to prevent waste of power beyond the target.

The bullet like a lead pancake with about 400 foot pounds behind it, is the best prescription yet devised for emergency treatment at close quarters, *and speed in the administration of the first dose* is worth more than all the rest of the box. This means that the open holster, slack belt, and thigh thong are essential ingredients of the prescription, and that the high rate of fire does not offset the difficulty of getting an automatic to make up its mind to fire at all.

SPECIAL CLASS AT RILEY.

AN invitation from the school authorities at Riley to attend the graduating exercises of the special class on April 29th was accepted with much pleasure on our part; especially as the photographs in the last issue of the JOURNAL had met with such cool reception on the part of many officers. "Do you mean to tell us," was the burden of the objection, "that these photographs correctly represent the seats and the proper positions as now taught at our great practical school. And can no better representations of horses, for cavalry purposes or otherwise, be found than those represented in the photographs as ridden by Mr. Gardiner, Mr. Dillman, Mr. Dallam, Mr. Dickey, and Mr. Talbot.

Without going into the question of the difficulty of getting good horse pictures, the difficulty of which every one understands that has tried the task, we will proceed to tell of the work accomplished by these young gentlemen as shown by their proficiency in the practical graduating tests.

The morning of the 28th of April was cool and clear. After a walk through the squadrons of the Second, Ninth and Thirteenth regiments, at Saturday morning inspection where we noticed the double rein universally used with the "Lesson in Picture" hand, we reached the riding hall

Here we found eight four-mule army wagons ready for the road. We found that the mules had been caught up from the herd, harnessed and hitched to the wagons by the young lieutenants constituting the graduating class. These young men occupied the seats as drivers, and as the wagonmaster gave the word, swung the teams, one after the other, into the riding hall. Here was given an exhibition of driving that would have done credit to an artillery battery on special drill at Madison Square. Coming into park at a gallop, breaking to the front and turning between stakes down the hall seemed to be play for these youngsters, who handled

their reins and whips with the ease of an old timer of '49. We were informed that these young men were required to know how to fix any part of their material that should accidentally become broken, whether it was a simple trace of the harness, or a pole of a wagon. They had been taught loading of the wagons, and with that we remembered the lieutenant in China that was required by the colonel to load his wagons himself the second day out from Tientsin on account of the general bad condition of the loads in his troop the day before. Here was instruction that counted. Possibly this instruction alone might not have rendered competent returns to the government for a special course, but this was only one of the many little things that showed thoroughness of detail to every particular, no matter how apparently small or insignificant.

When the young lieutenants had driven the wagons from the hall, some twenty pack mules came crowding through the door. These were hurriedly caught up by the class and the packs taken off and the mules turned loose in the hall. At the given word these mules were caught, blinded, and the packs put onto their backs. When all were packed, a number of officers were called from the audience to inspect the packs, and then the mules were galloped up and down the hall to show the secure manner in which the packs had been fastened. Of course the expertness of the packer does not rest in his ability to throw the diamond hitch, but rather in his knowledge of how to rib up the aparejo, but we rather imagined that a young officer with the knowledge of packing that these possessed would never be caught on a march without good mules and in good condition, no matter what the exigencies of a campaign.

When the packing work was over, eight horses were brought into the hall and held by as many soldiers. At a given word, after the tools for shoeing had been placed near each horse, the class started in a contest of shoeing. The hoof had to be prepared, the shoe fitted, and nailed on. There was no work at the forge of turning out the shoe, but many days are spent by the class in their regular course, in this instruction. No manner of help was given the class,

except that some one held the horses' heads. The time of shoeing was short; the time was kept, but we did not ask for it, as it really was immaterial, the work was so rapidly and yet so thoroughly done. We were particularly interested in this work, as so much has been made of this course whenever we have heard Riley spoken of. And we are not so prejudiced in favor of the school that we could not see faults and quickly express them. But we must say, that our scrutiny found no faults in this particular. True, one of the young men had driven a nail into one of his fingers, but this was due to hurry in the competition and not to inaccuracy. When a lieutenant was not satisfied with a nail as driven, he would draw it and drive again. And we noticed no wrong placing of the nails at the start and not a horse was pricked, and we venture so say these shoes are still on if the horses have not since been shod.

This work completed the morning's exercises, and after lunch we again assembled at the hall to witness the riding. This consisted of high school work with horses that had been under the instruction of the class since last November. No one else has handled these horses. Not even the instructor in horsemasterhip has ever mounted one of these colts. They have been ridden only by the officer of the class to whom they were originally assigned. The work was remarkable in its proficiency. True, the use of the aids may have been exaggerated, but what is one to expect from untrained colts after only some three months' work. These colts, it should be remembered, had never been mounted previous to November last, and not all of the time since then has been devoted to training. So that they represented young horses in what might be called the first stages of high school training. And we must say the results were, as stated above, remarkable. Even this week we had the pleasure of witnessing some horse work in one of our great circuses, and with one exception, we found these circus horses not so well trained nor so well handled as were the colts by the young men of the special class at Riley. We afterwards went into the circus stables to look over the horses and found this particular horse, that was so well trained, to be some years of age, with

a most pronounced thoroughpin, and a general air about him of the old stager. But here, at Riley, was work with new material, both horse and man, and the results most certainly bear out the adjective, "remarkable." If one will closely watch the work of circus riders with their trained horses, they will find the aids used to the fullest limit; and, while the young men at Riley used theirs in what might have seemed an exaggerated manner, it was no more than was necessary at that stage of training. These young men in a year would have the colts doing everything but talk, and that without other visible indications than are used by the remarkable trainer of Jim Key.

After the high school work, some old troop horses were brought in and sent over the jumps, some two or three of the horses going over five feet six. And it may be said right here to the officers that have been remarking on the looks of the photographs in last issue of the JOURNAL, that officers need have no fear that these young gentlemen can not ride. Two buckers were brought into the hall, blinded and saddled, and two of the graduates, picked by lot, were told off to ride them, which they did. An exhibition was also given of riding a mount that had never been ridden before.

These exercises completed the work, and we must say that we left the hall with a feeling that the Riley School was making good.

Some five majors of cavalry witnessed the exercises, and without fail their complaint was that they had not had such opportunities when they were second lieutenants. General Carter was present at the exercises and his careful statements are not to be taken amiss. He was well pleased with the work, and was desirous that more young men should be given the chance to attend the school. We understand that thirty-six young lieutenants are to be present for the course this coming year, twenty-four from the cavalry and twelve from the artillery.

One objection to the present idea of detailing the youngest second lieutenants is that from the older of the first lieutenants. These officers think that the school should be

thrown open more to them, because they are soon to be troop commanders and will remain in that position for many years to come. Whereas the second lieutenants, just out of West Point, as were the young men that have just completed the course, will be many years older before they are troop commanders and in as good a position to use their acquired knowledge as the men who are now about to be promoted to captaincies. This we admit is a good argument. But we must remember that all officers in the army can not be given the advantage of the service schools. But possibly we can spare enough of the young men to give them all as they enter a tour at some one of the schools, so that we will have a growing army of competent young men to take our places as we drop out. So possibly the scheme of sending the youngest lieutenants is as good as any other.

The young men of this first class struck us as particularly sensible. We were glad of this, for they have quite a position to hold as they go to their regiments. Were they rattlebrained, egotistical young fools, the present system at Riley would last about as long as their actions would last under some martinet. But we believe they have been well trained in discipline as well as in their duties, and we expect to see them go to their posts understanding that the world does not depend upon them entirely to reform the army. We have never seen the troop commander yet that was not always ready to grant his lieutenants all reasonable opportunity to work with the horses, and these young men now have a chance before them, to work honestly and faithfully under the direction of troops commanders who are invariably young themselves and ready to learn and improve, gaining knowledge from any source that can demonstrate its accuracy and correctness.

The success of any school must rest largely upon the conduct of the graduates after they have left the institution. These young men that have just finished the special course at Riley have had training in much that is necessary for a second lieutenant to know. How they will utilize this knowledge remains to be seen. It is to be hoped their Riley course will but stimulate them to further work.

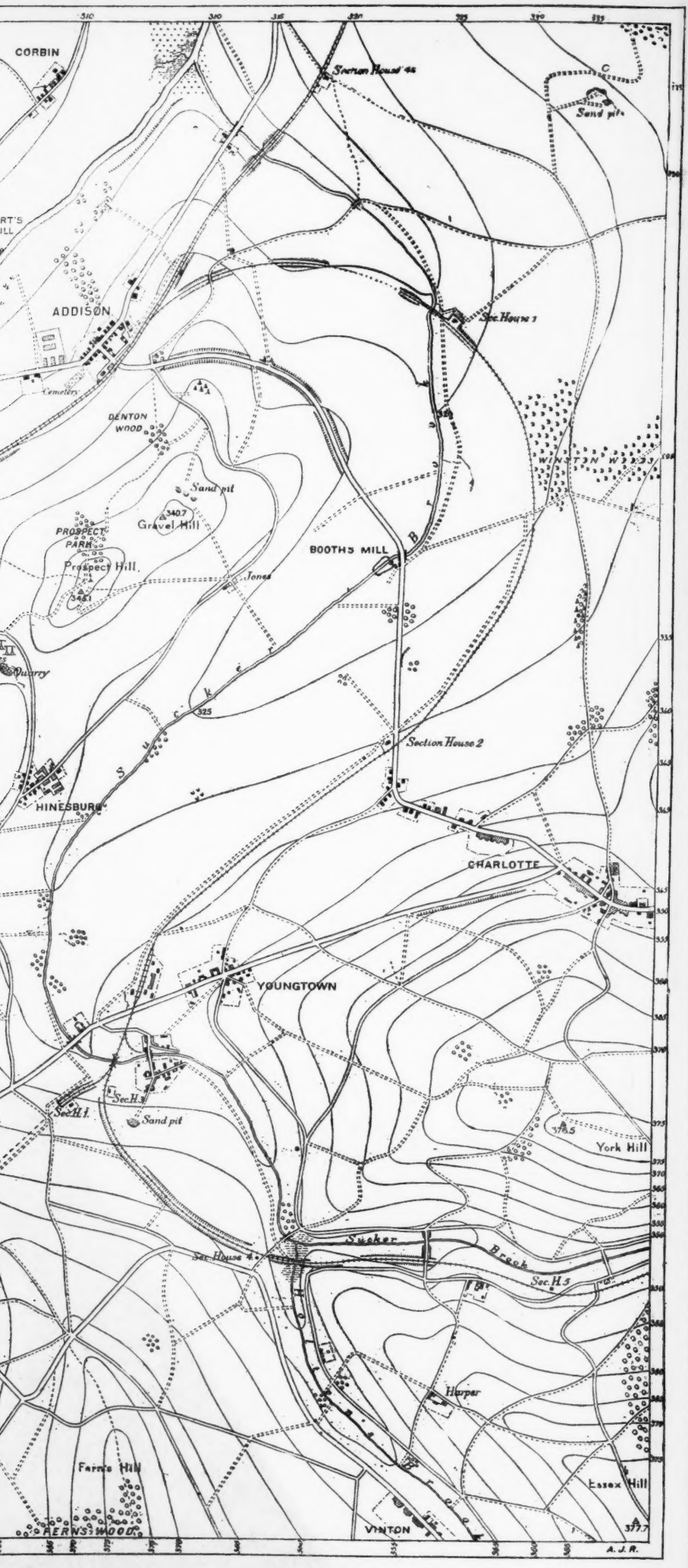
Regarding the school at Riley, the JOURNAL has had occasion to remark that it has endeavored to bring the service to a realization that we have now a great riding school. Possibly, as Captain Cameron said in his remark upon the school in the January JOURNAL of this year, Riley has not the reputation of Saumur, but Saumur has existed for one hundred and fifteen years, Riley for three. But from the present standing and the work accomplished at the latter place, it will not take a hundred years to make Riley as good as Saumur. In fact, from present indications, in a very few years Riley will be one of the leading riding schools in the world. And this is the fact we have sought to emphasize in our late issues of the JOURNAL. We have a great riding school and we want all our officers to know it. When the work at Riley is known to the mounted services, we feel a great interest in its work and its future will arise and all for the betterment of the army.

In closing we might say that the school, important as it is, is not all there is at Fort Riley. The work done by the squadrons and the batteries is of great profit to the cavalry and artillery. Here we find the cavalry board and we believe some of the artillery board are here doing their work upon the improvement of the artillery. We are glad to see that the post personnel at Fort Riley can not be excelled in the army—could not be excelled if the service were culled over for special appointments as to commanders and their subordinates.

MAP FOR INSTRUCTIO



TION IN PATROLLING, Nº I.



1:10,560

Interval - 5 yds.

500 600 700 800 900 1000 YARDS

PRIZE PROBLEM No. 2.*

General Situation:

A blue brigade in hostile country has been defeated west of the Orange-Onion River and is retreating eastward via Colchester.

Special Situation—Blue:

A flank guard (Captain A) consisting of two troops of cavalry and one rifle caliber machine gun, is retiring via Swanton-Fay's Corners closely pursued by a hostile squadron. At Swanton where the Blue detachment arrives at 10 A. M., firing is heard to the south, and the following message is received from the rear guard commander:

"The rear guard will be east of the river at Colchester by 10:45 A. M. and will fall back through Vinton. Hold the enemy west of Onion River until 11 A. M., and then retire through Charlotte on Smithville (five miles southeast of Charlotte). I shall destroy the bridge at Colchester."

Required:

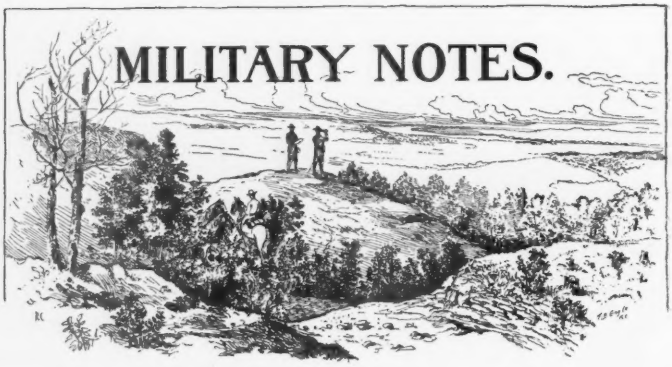
1. Captain A's estimate of the situation.†
2. A sketch (tracing) showing the disposition Captain A would make of his command in order to carry out the rear guard commander's orders.

Note: Weather, fair; Onion and Orange River (same stream) fordable for cavalry between Hart's Mill and mouth of Sucker Brook; passable elsewhere only at bridges.

---

*Answers must be submitted to the Secretary, Cavalry Association, before January 1, 1907. For other directions, see April JOURNAL, 1906.

† For the meaning of the term "estimate of the situation" (as used at the Infantry and Cavalry School and Staff College) see last issue of the CAVALRY JOURNAL. It is simply your view or opinion of the military situation existing at a certain time, with reasons therefor. In other words, it is the course of reasoning, logically expressed, by means of which you arrive at certain conclusions and take definite action. In this case you will give a detailed statement of what Captain A proposes to do (with reasons therefor) in order to carry out the order he received.



"A LESSON IN PICTURE" CONTINUED.

By Captain GUY V. HENRY, Twelfth Cavalry.

SOME method must sooner or later be adopted for holding the reins of the double bridle, and a continuation of "A Lesson in Picture" may not be out of place.

Figure 1 represents the English method; Figure 2, Fillis; Figure 3, French Cavalry (Anderson); Figure 4, Le Bon.

In what follows remember that the soldier has the use of *but one hand* in any discussion as to the best method of holding the reins. I will not go into any lengthy argument on the subject, but wish to point out a few facts and make some quotations. At any rate all methods should be given a fair trial and then the best selected. The statement that it is easier to teach the soldier one way than the other amounts to nothing, as he can be taught any ordinary method with equal ease.

The English method is adopted by certain civilian riders in England and America where the rider has the use of two

hands to lengthen or shorten the reins of the bit or bridoon at will. It has also been adopted at Fort Riley and I understand West Point, principally, I believe, because the instructors at these places are more familiar with this method. To use it with one hand requires all four reins to be of equal length, thus riding on both bits and allowing no alternate



FIGURE 1.
English Method. The Two Variations.

action of bit and bridoon, or it requires that one set of reins, as the bridoon for instance, be taken shorter than those of the bit; thus the latter cannot be used when necessary. Change it the other way, and you ride on the bit, in either case losing the chance of the play from curb to snaffle which is so essential to keeping a light mouth on the horse.

In this method one set of reins cannot easily be dropped if necessary.

In confusion they are easily mixed up and hard to pick out.

It is not used by the German, Swiss, French or British armies.



FIGURE 2.
Fillis Method.

It is used by the Russian, all four reins being of equal length.

Practically all pictures of English riders show them using two hands and always so when doing any school movements.

Le Bon, in "L'Equitation Actuelle et ses Principes," describes Figure 4 and says:

"The French hold of the reins requires only the use of one hand. The English hold of the reins necessitates two hands; each hand holds one rein of the bit and one of the bridoon, separated by the little finger. The French hold is applicable only to the well trained horse. It is the only one which permits easy separation, and above all to alternately use the action of the reins of the bit and of the bridoon if they be held in one hand, or, if the bridoon reins be



FIGURE 3.

French Cavalry (Anderson) Method.

held separately in one hand, this hold permits alternate effects to be very strongly produced. The English hold is excellent for the badly trained or sour horse, and for training; it also permits the rapid uniting of all the reins in one hand; but it permits only with difficulty, the separate employment of the reins of the bit and bridoon, and not at all of their

alternate and successive employment. It is recommended to beginners, or to the rider who mounts an unknown horse."

(Remember, the English hold above refers to two hands.)

Captain A. Gourmel, instructor from 1894 to 1899 for officers and noncommissioned officers, Fifth Hussars, states that the English method (Figure 1) is suitable for road rid-

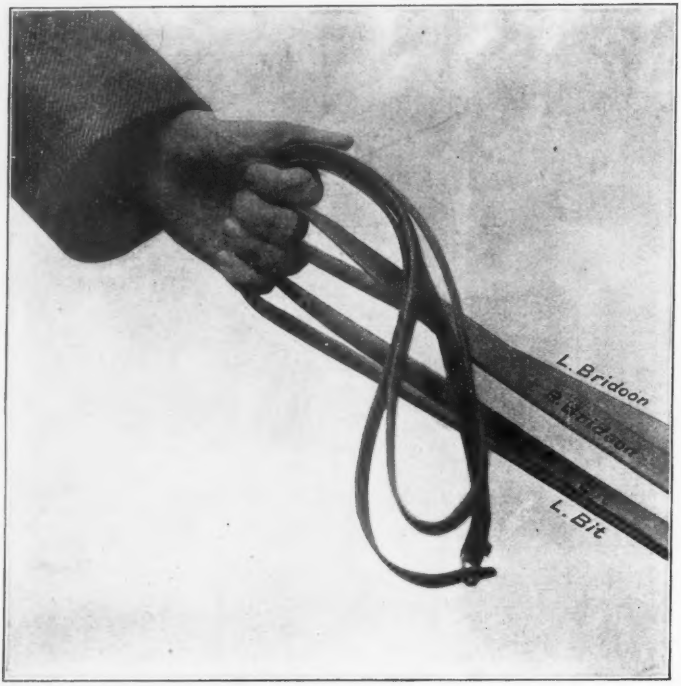


FIGURE 4.
Le Bon Method.

ing at the walk, trot and gallop, but he does not recommend its use by his students.

All the above tends to show that the English method is not generally used by armies or continental riders.

The methods of Figures 2, 3 and 4, or any of their combinations, allow the alternate effect of the two bits, so essential to a light mouth.

They allow either set of reins to be easily dropped, or in confusion to be easily found, as each set is at all times separate and distinct.

Fillis, in "Breaking and Riding," says,

"There are three orthodox ways for holding the reins, namely, the English, German, and French. I do not hesitate to say the French way is the best.

"As the snaffle is higher in the mouth than the curb, its principle action is to raise the head of the horse, and that of the curb to lower it. In other words the snaffle is an elevator, the curb a depressor, therefore the reins should occupy the same relative position in the hand as the snaffle and curb do in the mouth, viz., the snaffle reins should be above the curb reins.

"Contrary to this very simple principle, the English place both reins at the same height in the hand and hold one rein between each finger. The Germans act in a still more contrary way to the principle in question, by holding the snaffle reins below the curb reins, supposing the hand is in a vertical position. It appears that the Germans have even less common sense than the English.

"Reason tells us that the reins should be held in the French manner, hand vertical. (Figure 2.) With the reins held in this manner and without displacing the hand, we are able, by the mere play of the wrist, to obtain the movements which are indispensable for acting on the mouth, supposing of course, that the animal is broken."

H. M. Hayes, the translator of "Breaking and Riding," and himself the author of many horse books, says of Fillis:

"I therefore trust that all English-speaking horsemen, and especially cavalrymen and polo players, will profit by the valuable instruction which he (Fillis) now puts before them."

"Armée et Marine," April 5, 1905, says, referring to Saumur:

"We can only boast of the most wonderful riding master that Europe has produced in a long time, Fillis."

Figure 3 represents the hold recommended by Anderson in his valuable works, "Curb, Snaffle and Spur," "Modern Horsemanship," and "Riding and Driving," also that re-

quired of French Cavalry by Par. 261, French Cavalry Drill Regulations of 1882. Captain Gourmel indicates (1901) that this is still required by labeling a similar illustration, "Tenne des rênes à l'ordonnance," and adds, "As one carries the littte finger toward or away from the body one rides on the bit or the bridoon." This quotation shows the alternate action of the two bits, so much to be desired.

Thus we see that Anderson, Fillis, LeBon, Gourmel, French Cavalry Drill Regulations, and many others not mentioned, all recommend the methods of Figures 2, 3 or 4, (the majority that of Figure 2) because of the alternate action that can be had and the absolute lack of confusion between the two sets of reins. Personally I prefer that of Figure 3, used by the French cavalry and recommended by Anderson, because I have used it for a number of years, consider the hold more secure and also less tiring to the hand in case of a pulling horse. I have ridden it in polo and in school work with most satisfactory results, and have always found that with a properly adjusted curb chain the alternate and successive action of the bit and bridoon can be had with ease.

"A Lesson In Picture," (CAVALRY JOURNAL for January, 1906) gives the method in Figure 1 the "Best for Military Work" and that of Figure 4 the "Best for School Riding."

How can these two be reconciled? What is cavalry drill and cavalry work in general but "school riding" pure and simple (not high school)? What are halting at increased gaits, backing, passaging, turning on the forehand, but school movements pure and simple? The latter the basis of all school movements.

If the above be true why not then adopt a school method of holding the reins, preferably that of Figure 2 or 3, thus retaining with one hand the alternate and successive action of the bit and bridoon and thereby obtaining the maximum good from the adoption of the double bridle?

"HORSES, SADDLES AND BRIDLES."

June 8, 1906.

The Editor The U. S. Cavalry Journal, Fort Leavenworth, Kansas:

SIR:—I have recently completed a revision of "Horses, Saddles and Bridles." The first edition of this book was reviewed in the CAVALRY JOURNAL some ten years ago, and the second edition a few years later. As it would require someone to carefully compare the present edition, page by page, with the second edition to fully appreciate the numerous changes, I have deemed it best to make a personal explanation through the JOURNAL.

The original volume was prepared by me while on duty as instructor in the Department of Cavalry, at the request of the school staff of the Infantry and Cavalry School, to avoid groping in so many foreign text books for the particular information needed in the course which had been introduced at that time.

The old time regular cavalry contained many fine horsemen, and the regiments generally were superbly mounted. Selected officers going abroad during the preceding half century to study the arm had brought back valuable information from time to time, but as a general proposition it may be stated that the Quartermaster's Department supplied the horses, the Ordnance Department the saddles and bridles, and tradition and drill books were depended upon to do the rest. Veterinary knowledge was at a very low ebb in the service, and there seemed little or no hope of improvement until the two schools at Forts Leavenworth and Riley were established. The word "Hippology"* was finally coined as the result of efforts to crystallize a lot of information into a course of study.

It was realized by the author that the first edition of "Horses, Saddles and Bridles" was not a perfect substitute for some of the valuable books which it replaced. The sec-

*See definition of "hippology" in the Century Dictionary.

ond edition was intended to be an improvement upon the first, but before that edition was exhausted it was made apparent that numerous changes should be made to prepare the book for use in the wider field into which it had been introduced. Some obscure paragraphs required elucidation, and several portions of the original work which seemed to merit it have been much amplified. On the other hand some portions which have led to undue discussion beyond their real importance have been modified or altogether eliminated. A rearrangement of the chapters has been deemed advisable, and a glossary of terms used in the examination of horses for conformation and soundness, has been added at the end of the book. It is believed that this glossary will prove most useful, especially to those students who have had no previous experience with horses. The very important chapter on "The Cavalry Horse," has been extended to include the points of the artillery horse.

So much difficulty is encountered in the purchase of horses by contract, owing to differences of opinion as to soundness, that the report of the committee of the American Veterinary Medical Association, which was appointed to investigate the practicability of establishing a standard of soundness, is quoted in full in its appropriate place. The author fully agrees with the committee that degrees of absolute soundness and serviceable soundness should be recognized for general purposes, but to adopt this principle in the purchase of public animals requires a high degree of training on the part of inspectors.

The chapter on the "Frame Work of the Horse," mechanically considered, has been made to follow the chapter on "Conformation." The next chapter in order, "Gaits of the Horse," has been somewhat modified to make clear points which appeared to be obscure or were misunderstood by students. The alterations in the chapters make those on "Bits," "Bitting and Training," "Saddles," "Seats," "Modern Cavalry and its Equipment," and "Endurance of Horses" follow in consecutive order. Those relating to the subjects of "Age of the Horse," "The Horse's Foot," "Stable Management," "Veterinary Supplies and Prescrip-

tions," "Diseases and Injuries," "Forage," and "Transportation of Horses by Rail and Sea," have been grouped in the latter part of the book.

The chapters on "Bits and Bitting" and "Training" have been completely rearranged and carefully rewritten. Owing to the book being used by other than cavalry and field artillery officers, the aids and bending lessons have been explained in this portion of the work. The chapter on "Saddles" has been considerably abbreviated and simplified. The chapter on "Seats" has been made to include the method of holding the double rein adopted at the Cavalry and Field Artillery School. Various authors on equitation have trifling differences in method or peculiarities in holding the reins. The reasons assigned for the adoption of this method at the Cavalry and Field Artillery School, in the opinion of the author, are sufficient to justify its general adoption throughout the service.

The frequent changes in uniform and equipment make it quite difficult to reprint books fast enough to keep up with all of the minor modifications if that were deemed necessary or advisable. To simplify the chapter on "Modern Cavalry and its Equipment," the tables of articles and weights carried have been eliminated in the rearrangement of the chapter; only the essential elements have been retained to show the various methods of the cavalry of the more powerful military nations. The author had an opportunity to visit Japan just before completing the revision of the book, and was successful in obtaining illustrations and reaching some conclusions on the Japanese cavalry.

The chapters on "Endurance of Horses" and the "Age of Horses," have been modified but slightly. That portion of the work relating to "Stable Management" and "Diseases and Injuries" has been considerably changed, and in the opinion of the author, much improved. "Diseases and Injuries" have been brought together under appropriate headings, as adopted in the instruction at the Cavalry and Field Artillery School, and many additions resulting from the author's studies in the Philippine Islands will be found useful to officers having charge of animals in tropical countries.

The chapters on "Forage" and "Transportation of Horses by Rail and Sea" have been but slightly modified. The author was somewhat tempted to eliminate the chapter on "Transportation of Animals," owing to the appearance of a similar chapter in the new Field Service Regulations; but as his book is used by so many persons not possessed of copies of Field Service Regulations, it was finally deemed best to retain the chapter.

The author contemplates at the earliest practicable moment the preparation of a list of questions and answers applicable to the third edition of "Horses, Saddles and Bridles" for the use of examining boards and students. While the list will not be a bar to examining boards asking any questions thought necessary to develop the knowledge of an officer undergoing examination, it is believed that such a list will greatly facilitate the acquisition of an accurate knowledge of the contents of the book.

The author is under many obligations to various officers for advice in regard to the revision of the work. Many times it has been suggested to him that if the book were rearranged and paragraphed it would be much easier to acquire a knowledge of it. In the opinion of the author there are few subjects which commend themselves to such an arrangement in the instruction of mature men; in fact such an arrangement is only useful when preparing for an examination by cramming. The practical results to be obtained by cramming questions and answers without going into the history of a subject, are rarely satisfactory, and the author has felt constrained to steadfastly adhere to the presentation of the subject matter as it appears in the present volume.

The justification for this view lies in the fact that the large majority of cavalry officers of the present generation, trained under the modern system, are much better informed in the theories of hippology than their forebears of the old army, and this knowledge has enabled them to sustain in active service the best traditions of the arm with a minimum of preventable loss.

Even a casual examination of the book will justify the conclusion that no apology is needed for the publisher's efforts on the text and illustrations, and that the volume, typographically, will bear comparison with any professional works published in recent years.

Very respectfully,
WILLIAM H. CARTER.

Publishers, Friedenwall Co., Baltimore, Md. Also for sale, Scribner's Sons, New York; A. C. McClurg & Co., Chicago, Ills. And arrangements will be perfected whereby the book can be purchased from the Secretary of the Infantry and Cavalry School and Staff College, at Fort Leavenworth, Kansas.

SADDLE PEG.

TROOP "F," SECOND CAVALRY,
FORT RILEY, KANSAS, April 13, 1906.

The Adjutant, Cavalry Subpost, Fort Riley, Kansas:

SIR:—I have the honor to report that the iron saddle pegs now in use in the new cavalry stables at this post are practically useless for the purpose intended, for the following reasons:

1st. They are too short. Therefore the saddles frequently fall off.

2d. The upper surface of the cross section is too small; hence a saddle must be very carefully balanced. If not so balanced, it turns to one side or the other and falls off.

3d. A saddle fully packed will not remain on the saddle peg at all, on account of the defects numbered 1st and 2d.

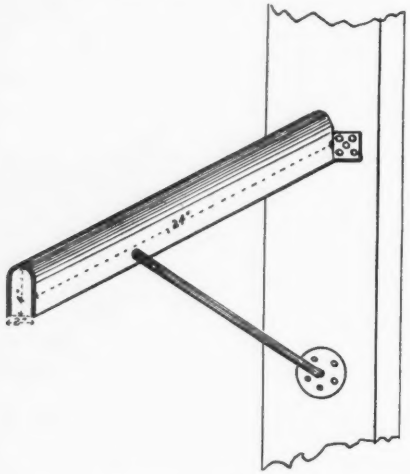
In my opinion the saddle peg should be made of hollow iron twenty-four inches long, two inches thick, and three to four inches deep, with the upper surface well rounded and perfectly smooth, so as not to injure the saddle.

The sides and bottom at one end of the peg should flare out giving a better bearing surface against the wall.

These flanges should contain screw holes for fastening the peg to the wall.

An iron brace should run from a point, about one-third of the length of the peg from the front end, diagonally down to the wall.

The whole length, twenty-four inches, is required when a saddle is packed. The width, two inches, with a well rounded top surface permits the peg to enter the slit in the seat of the saddle without injury to the saddle, which fact, together with the four inches depth, keeps the saddle in place and does not permit its turning from side to side on the peg. Neither a hook under nor a knob at the end of the



Saddle - Peg

present peg is required. Both are disadvantageous; the former hides dirty equipments; the latter injures the under surface of the saddle.

Four stout hooks each about four inches long should be placed at a convenient distance above each peg for loose parts of the horse equipments of small size, such as nose bag, watering bridle, etc.

A peg of the same dimensions made of planed oak with iron brace and fastened to the wall by angle irons and screws or bolts would also serve the same purposes.

A piece of two by four inch scantling planed to a round, smooth surface on top edge and sides, of the dimensions given above, one end fastened against the wall with round edge up and brace of wood underneath, makes a fair sample of such a peg.

Request that this report be forwarded to the proper authorities of the War Department.

Very respectfully,

C. E. HAWKINS,
Captain, Second Cavalry.

RIFLE ON HORSEBACK.

The Journal:

I HAVE no great amount of confidence in the following, but I have not yet seen any unassailable solution of the Rhodes problem. ("Cavalry Equipment," the JOURNAL, April, 1906.)

I have known of a troop of cavalry carrying the carbine balanced on the pommel through an Indian campaign of several months; and I have seen frontiersmen carry a long tom in some such way.

The following is a mere suggestion:

Rifle balanced on pommel, held by a steel grip or frog, butt to the left and depressed until muzzle is elevated to an angle of about 45 degrees; axis of barrel perpendicular to axis of horse.

Lariat fastened to the near pommel ring. Canteen fastened to the off pommel ring. Saber suspended from near cantle ring by means of a loop (as is done in the French cavalry).

Nosebag suspended from the off cantle ring. Tin cup in nosebag or on canteen strap. An extra bandolier of ammunition may be carried in the nosebag.

Overcoat, or slicker, or cape, or poncho, or blanket, carried on cantle with shelter half.

Shelter pole and pins may be carried in nosebag or packed with cantle roll.

Weights in saddle bag distributed so as to balance the pack saddle.

Half ration of grain may be carried in nosebag.

Haversack to be carried by trooper when cut loose from transportation. Also useful for dismounted service and travel by rail. Ordinarily on marches the haversack (and blanket bag) with spare clothing, etc., will be carried on wagons or pack animals.

J. G. GALBRAITH,
Major of Cavalry.

GENERAL KUROPATKIN'S FAREWELL ORDER TO THE FIRST MANCHURIAN ARMY.

(Translated from the *Revue de Cercle Militaire*, March 31, 1906, from the French, by Captain Raymond Sheldon, Eighteenth United States Infantry, at Fort Leavenworth, Kansas, 14 April, 1906.)

GENERAL KUROPATKIN has issued to the First Manchurian Army the following farewell order dated the 5–18 of February last:*

"By order of the Emperor I will abandon Manchuria when the breaking up of the First Manchurian Army shall be concluded.

"For two years commander of the troops in the First Manchurian Army, and having observed their manner of performing duty during that time from a point close by, I am impressed with a great esteem and a deep affection for them.

"From the beginning of the war, you have been the first to bear the shock of numerically superior hostile forces; you died, but you did not abandon the positions with whose de-

*The 5th, old calendar; the 18th, new calendar.

fense you had been intrusted until you had received the order to retire.

"During the continuance of the war, several regiments very sorely tried by hostile fire, have seen their officers' effective strength three times renewed and that of their men twice; but far from losing courage, these regiments were hardened, had acquired war experience, and were absolutely prepared to return to the combat.

"Our enemy purchased the successes he gained only at the price of heavy sacrifices, as he suffered such immense losses that it was long ere he could resume operations.

"It has not been our fate to win the final victory. At the moment when we had appreciably reinforced our effective strength, and when we had become strong under all the (unfavorable) reports, the army learned with sorrow, and yet with complete submission, of the conclusion of peace.

"In parting from you, I express my regret at not having seen you victorious during this period in which we have had to struggle against a brave and eminently patriotic nation.

"We can regard our valiant enemy with a sentiment of esteem. I am convinced that the Japanese, themselves so, render the respect that is due to the stubbornness and endurance of the troops of the First Manchurian Army.

"They have been obliged to acknowledge that, had the war continued, they would have had to change places with us and begin to fall back.

"I thank with a full heart, for their services replete with self-denial, all the corps commanders, the chiefs-of-staff, all the generals, the superior and subaltern officers, the doctors, the nurses and the military officials.

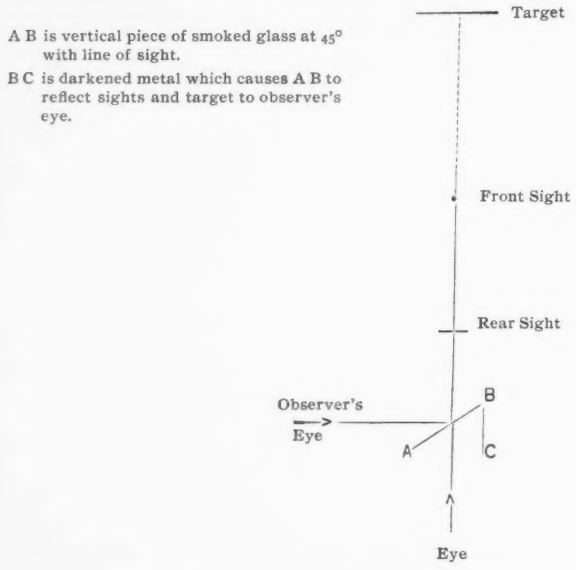
"To the soldiers, I extend from the bottom of my soul a Russian 'Thank you!'"

THE PIEPER AIMING DEVICE.

THE Pieper aiming device which is issued by the Ordnance Department is very useful in detecting the nature of the error in aiming and firing. It will show whether the person flinches or pulls off the target at the moment of firing.

In principle, it consists of a vertical piece of slightly smoked glass placed behind the rear sight and at an angle of

PRINCIPLE OF PIEPER'S AIMING DEVICE.



45° to the line of sight, and also at 45° with a darkened piece of metal, set approximately parallel to the line of sight. The glass affects in no way the view of the person aiming, but the darkened metal makes it reflect to the observer the images of the sight and target just as they appear to the person aiming.

This device can be adjusted and reversed instantly, as any position for it will be correct by which the observer's eye can see the images of the sight and target.

A. J. DAVIS,
Second Lieutenant, Ninth Cavalry.

THE BAYONET FOR CAVALRY.

The Secretary U. S. Cavalry Association, Ft. Leavenworth, Kan.

SIR:—I desire to call your attention to the question of the bayonet for the cavalry. G. O. No. 70, War Department C. S. paragraph II, which directs certain paragraphs of the Infantry Drill Regulations, relating to the handling of the new rifle, to apply for cavalry armed with that weapon, omits those paragraphs which relate to the use of the bayonet. Are we not to retain the present bayonet, and if not, why not? I suggest (timidly) that the present rod bayonet be retained for the cavalry and that all troopers be trained in its use.

The real use of the rifle is in dismounted work, and as armed at present the cavalry, dismounted, should be able to meet infantry on its own ground. Good dismounted troops will always be able to find use for the bayonet, just as good cavalry will find use for the saber. The present rod bayonet is light, easy to carry, not in the way. Perhaps the new bayonet to be adopted for the infantry would be better, but I believe that will be carried on the person. The present method of carrying is for us much the better. If we are without the bayonet in any actual work dismounted I feel sure we shall regret it. I have spoken to older officers on this subject, and I believe many agree with me.

Very respectfully, F. W. FONDA,
First Lieutenant Tenth Cavalry.

NOTE:—The Russo-Japanese War would seem to indicate danger in arming cavalry for too great an amount of dismounted work. The subject is important, and cavalry officers are requested to send articles upon this matter to the JOURNAL.

TITLE TO SOLDIERS' CLOTHING.

U. S. STAFF COLLEGE,
FORT LEAVENWORTH, KANSAS, May 20, 1906.

The Editor Cavalry Journal, Fort Leavenworth, Kansas:

REFERRING to my article on the subject of stolen or embezzled government military property appearing in the last issue of the JOURNAL, I have the honor to invite your attention to the following decision of the Federal District Court for the northern district of Illinois. A copy of this decision was sent me by General W. H. Carter, commanding the Department of the Lakes, and seems to settle the question of the title to clothing issued to soldiers. It remains in the United States.

Very respectfully,
D. H. BOUGHTON,
Major Eleventh Cavalry.

* * *

IN THE DISTRICT COURT OF THE UNITED STATES OF AMERICA, FOR THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION.

UNITED STATES OF AMERICA,
vs.
EDWARD HART,
No. 3676.

Bethea, J.

This is an indictment for violation of the provisions of Section 5438, Revised Statutes of the United States. The part of the section under which the indictment is drawn is as follows:

"* * * every person who knowingly purchases or receives in pledge for any obligation or indebtedness from any soldier, officer, sailor, or other person called into or employed in the military or naval service, any arms, equipments, am-

munition, clothes, military stores, or other public property, such soldier, sailor, officer, or other person not having the lawful right to pledge or sell the same, every person so offending in any of the matters set forth in this section shall be imprisoned at hard labor for not less than one nor more than five years, or fined not less than one thousand nor more than five thousand dollars."

It appears that Edward Hart, the defendant, on a number of different occasions at his place of business in Highwood, Illinois, purchased and received in pledge from soldiers employed in the military service of the United States at Fort Sheridan, certain articles of clothing consisting of fur caps, fur gauntlets, capes and coats, which articles had been previously issued to them as soldiers by the United States.

On motion to take from the jury the question arose as to whether certain articles of clothing, namely, caps, gloves, shoes and coats, which had been issued to soldiers in the service of the United States and by them sold and pledged to the defendant, are public property under Section 5438 of the Revised Statutes.

Clothing is issued to soldiers by the United States for use by them in the capacity of soldiers. The government determines the character, quality and quantity of clothing to be issued to the soldiers, and when the clothing is issued, although it is charged against the soldiers on their clothing account, they receive but a qualified interest therein.

The Seventeenth Article of War (Act of July 27, 1892) provides that any soldier who sells or through neglect loses or spoils his horse, arms, clothing, or accoutrements shall be punished as a court-martial may adjudge.

Section 3748 of the Revised Statutes provides that clothes, arms, military outfits, and accoutrements furnished by the United States to any soldier shall not be sold, bartered, exchanged, pledged, loaned, or given away; and that no person not a soldier, or duly authorized officer of the United States who has possession of any such clothes, arms, military outfits, or accoutrements, so furnished, shall have any right, title or interest therein; but the same may be seized and taken wherever found.

These sections of the Revised Statutes indicate that the title to clothing issued to soldiers remains in the United States, therefore I hold that in this case the articles of clothing which were issued to the soldiers at Fort Sheridan while they were employed in the military service of the United States were public property under Section 5438. Motion to take from the jury overruled.

Jury instructed to return verdict of guilty.

SUBSTITUTIONS IN PUNISHMENT.

First Lieutenant E. A. KREGER, Twenty-eighth Infantry.

A SUMMARY court has properly inflicted a punishment of three months' forfeiture and confinement for the same period. Can substitutions be made in accordance with Article Seven of the Punishment Order, page 59, Manual for Courts Martial?

Substitutions can not be made. The act establishing the summary court, approved June 18, 1898, as amended by Section 4, (A. W. 83), of the act to prevent the failure of military justice, approved March 2, 1901, places a limit upon the punishing power of the summary court, both as to confinement and forfeiture of pay. In the Eighty-third Article of War it is provided that "* * * * summary courts * * * * shall have power to award punishment not to exceed confinement at hard labor for three months or forfeiture of three months' pay, or both, and in addition thereto, in the case of noncommissioned officers, reduction to the ranks, and in the case of first class privates, reduction to second class privates. * * * *"

The sentence quoted above inflicts the maximum confinement and also the maximum forfeiture that may be imposed by the summary court. To convert any part of the forfeiture into confinement and add it to that already ad-

judged would make the confinement for a greater period than the summary court can legally impose. Conversely, to convert any part of the confinement into additional forfeiture, would make the forfeiture thus adjudged in excess of the legal limit fixed by the law. In other words, the executive order relating to substitutions can not bring about any extension of the limit of punishing power fixed by statute.

ARMY DISCIPLINE.

THE Secretary of State for War appended the following memorandum containing "Notes on Clauses" to the Army (Annual) Bill, which has been issued as a parliamentary paper:

Clause 4. The object of this clause is to prevent soldiers convicted of purely military offenses being subjected to the stigma attaching to imprisonment. This object is effected by the creation of a new punishment to be termed detention. Soldiers sentenced to detention will be termed soldiers undergoing detention; and the places in which they will be confined will be termed detention barracks. The change is little more than a change in nomenclature, as at present soldiers sentenced to imprisonment and not sentenced to be discharged with ignominy, whilst undergoing imprisonment in military prisons wear uniform, and not prison clothing, and the hard labor they undergo consists of drill and other military exercises.

Clause 5. In the late South African War the high pay in colonial forces tempted a certain number of soldiers to desert the regular forces and enlist in the colonial forces. The object of this clause is to extend to such cases the provisions of the Army Act relating to fraudulent enlistment.

Clause 7. This clause enables a sentence of loss of seniority to be inflicted on a noncommissioned officer by a sentence of a court-martial. At present a sentence of reduction

can only take the form of a sentence of reduction to a lower grade.

Clause 9. Sub section (1)—The object of this sub-section is to do away with flogging altogether in military prisons and detention barracks. Sub-section (2)—The object of this sub section is to enable soldiers in military prisons and detention barracks to earn by good conduct in prison, a remission of part of their sentence.

Clause 10. This clause subjects reservists to military law when they are employed in military service under the orders of an officer of the regular forces.—*Broad Arrow.*

TARGET PRACTICE IN VERMONT.

"I COME from the hills where the Green Mountain boys used to play hide and seek with the red coats of King George," said John W. Lee, of Burlington, Vt., at the Plankinton. "Nowadays Burlington is noted chiefly as the headquarters of a big patent medicine concern, but we still keep up the old traditions—that is, in the country districts. Our boys are just as good shots now as in the days when they carried Ticonderoga, and this is due to the fact that we still keep up rifle practice. We have some splendid shots among our boys, shots that would surprise the Westerner or the Wild West show fellow who breaks glass balls with rifle cartridges filled with small bird shot. At the age of twelve our boys are expected to bring down honey bees on the wing, and when sixteen years old it is a poor shot who cannot hit the bull's-eye without looking at it. They are pretty near as good shots as the fellow who went out gunning for duck and came across a flock that darkened the skies. 'They came so fast and there were so many of them,' he said, 'that all I had to do was to load and shoot, load and shoot, and load and shoot. Finally I just shot.' It is when the boys are twenty years old that the real test comes, however. Every season

we have a grand contest for all the boys who become twenty years old that year. They go out to a small hill and take up a position at the foot. The judges start a barrel rolling from the top, and each contestant takes turns in shooting at the barrel. The contestant who fails to put five bullets through the bung hole while the barrel is coming down hill is accounted a poor shot and loses his membership in the local country club. We have not lost a member in twenty years."—*Milwaukee Sentinel.*

Editor's Table.

SAN FRANCISCO.

San Francisco, beloved of the army, is to-day but a memory. But what a memory in the hearts of our army. No other city occupied so near and dear a place in the love of the American soldier. Underneath her friendly gaze assembled the armies that were to cross the mightiest of oceans to bring happiness to a benighted people. And after the martial struggles were over this bright, gay city stood upon her green hills to welcome the tired soldier with his first view of home.

San Francisco had not the opulence of New York or Philadelphia, possibly not the culture of Boston, not the repose of Baltimore and Washington, nor the ease of New Orleans, but she did possess a soul known and loved by our soldiers. A disaster to no other city could have struck terror to the hearts of the soldiery such as came to us on the awful 18th of April. The army is not in a condition to respond financially so full as it would wish in the call that went out, but we feel that the work performed by the regular army during those terrible first days is a fitting memorial of our regard for the stricken city. San Francisco has our deepest sympathy in her grief, and our greatest admiration in her courage. We shall watch her growth to new power and beauty with loving eyes, and while shedding tears over the gay city of the past will feel pride in the wondrous city of the future.

TIME REQUIRED TO MAKE A CAVALRYMAN.

We confess to a little surprise when our esteemed contemporary and club companion, the *Infantry Journal*, remarks that it is sorry that our Secretary of War has fallen in with the popular fallacy, that it takes longer to make a cavalry soldier than an infantry soldier. Somehow we have always held that idea, and not until reading the remarks referred to above, did we know that this idea was nowadays considered a fallacy.

We have always been under the impression that the following about correctly expresses the relative training of the two branches:

INFANTRY.	CAVALRY.
1. Rifle.	1. Rifle.
	2. Pistol.
	3. Saber.
	4. Horse.

We would delicately suggest that there is a little strabismus somewhere, and as long as we believe we can see four on one side of the line to one on the other we must think that the faulty eyesight is not ours.

BOOKS ON THE RUSSO-JAPANESE WAR.

Books, books, books. As stated in former issues we have been unable to keep pace with the increasing number by personal reading. We give in our book reviews notices of three recent books, and we are sorry that we cannot give the notice from some member of the Cavalry Association, for a magazine review may be accurate from a military standpoint and it may not. However, we have considerable confidence in the publications quoted from and it would seem from the reviews that none of these books is entitled to be in the JOURNAL'S list of necessary volumes.

We also give on page 188 a review by Captain Fox Conner, Artillery Corps, of Smith's "Siege and Fall of Port Arthur." Captain Conner has a large number of books on the Russo-Japan War, and is excellently qualified to give valuable comments on all books dealing with this subject.

Due to lack of time we have been unable to read Sir Ian Hamilton's book, "A Staff Officer's Scrap Book," and we must once more put this off until the next issue. It has so many friends, this book, and there are also so many that think the book but an indifferent one, that we must have personal knowledge of it before recommending purchase or otherwise. We trust we shall be able to give the book a thorough review in the next issue

The JOURNAL has been asked what was the limit of price upon our recommended purchases. We can quickly answer, the lowest possible limit. We have been asked if it would not be well to have two lists recommended, a list as at present and another for officers that lay aside about five dollars per month for the purchase of books. Possibly this would be a good idea, but we could not always feel sure that all of the five dollars per month expenditure was to go for books upon the Japanese War. There are other books appearing from time to time that officers must purchase, and so there would really be no known limit to a five dollar per month allowance. Our idea has been to recommend those books to our officers that were worth a self-sacrifice somewhere to secure them. We fully understand the pecuniary conditions of the service and know that even a small expenditure for books is to be carefully considered. Hence it was that in the last issue of the JOURNAL we cut out Cowen's book. We were sorry to do it, but we consider the books recommended superior to a military student, and we wish to keep down the limit in price. No book will be recommended for purchase by the JOURNAL OF THE CAVALRY ASSOCIATION (whether upon the Russo-Japanese War or other subject) that is not considered worth purchasing by our officers who have nothing but their salaries to subsist upon.

We find during the last three months one book that we recommend, and we will now carry this in our list. It is "The Battle of Mukden." This is an authorized translation from the *Militär-Wochenblatt*, by Karl von Donat. Hugh Rees, Limited, London. Price six shillings, net.

This is a small book of only seventy-two pages, less than fifty of which are devoted to the great battle. This account is by what are supposed to be the most competent military critics in the world, the German General Staff. It is a terse statement of facts, with no reflection or comment. It is the best account that has yet appeared of the battle of twelve days' duration where 620,000 men were engaged. In a small pocket at the end of the book are eight excellent colored maps, illustrating the movements from day to day. We believe this book gives us the proper way to study a battle, and until the Japs or Russians are ready to give more details than they have heretofore we hardly see how this description can be bettered.

Some twenty pages, after the description, are given to comments by Lieutenant General von Caemmerer. In our January issue of this year we gave a short review of one of this General's works, "The Development of Strategical Science."

That the book was good, goes without saying. That it was anything wonderful, we are not so ready to concede. And we are not particularly impressed with the comments by Lieutenant General von Caemmerer upon the battle of Mukden. We were inclined to smile at his insinuations that the Russian commander should have listened to the advice or comments of the Germans just previous to the battle of Mukden. We are under the impression that Kuropatkin was too busy at that time to listen to the theories of theorists thousands of miles from the scene of conflict. And we are not at all sure that had the Russian commander followed implicitly the advice *then* offered, he would have met with any more success than he did. It is always easy to say what might have been done after events have passed into history and hindsight gets to work. And it is not always possible, or it seems not at any rate, for one offering advice

to remember exactly what his advice was, when once the event has occurred and his former ideas are colored by later events.

Von Caemmerer's comments are good, but nothing more than any serious student of military history and strategy could give. However, we are glad they are given in the book, as they indicate to the careful reader the trend of German partisanship during the struggle.

* * *

One book that deals with the after effects of the struggle has come most prominently to our notice. Parts of this work appeared last fall in *Scribner's Magazine*, and we carefully read what was printed at that time We refer to "The New Far East," by Thomas F. Millard.

A personal acquaintance with the author, though slight, makes the work especially interesting to us. From this acquaintanceship, gained at Peking and Yangtsun in China during the Boxer trouble, we were favorably impressed with Mr. Millard's personality, but not so favorably impressed with his accuracy and judgment. We remarked at that time that for a correspondent who had attained such prominence, he seemed very willing to take what came to him while sitting in commanding officers' tents in place of getting out and rustling for it. If this characteristic still remains in Mr. Millard, any book that he could write would not be received by us with great belief in its accuracy.

That he is a most charming writer we must all allow. That his English is good and most exceedingly readable we are most ready to allow. But not until time has proved true at least some of the statements of his recent book, can we say that he could write a book that could be relied upon to be absolutely careful and accurate.

The first chapter of "The New Far East" we must say has given us some new ideas. We had some dim idea of what the English press was doing, but possibly we had too great a confidence in our own Associated Press. We are exceedingly thankful to Mr. Millard for making us more care-

ful than heretofore about what we read in the important dailies and other influential publications. We believe he is right in saying that the sentiment and beliefs of the American people during the last five or six years have been shaped most cleverly in the way that England and Japan wished. And while Russia sought to combat this foxy propaganda, yet, as the author states, it was too late, and the effort was not influential enough to overcome the wonderful start the English and Japanese interests had already attained.

Mr. Millard's idea is that public sentiment in America has been shaped by a carefully prepared plan on the part of England and Japan. That this was quite easily done, not only on account of a subsidized press, but what was practically a government press, in those countries. He states that a Japanese press bureau was established in London, with branches in Europe, and indirect connections in America, for the purpose of keeping the Japanese point of view conspicuously to the fore. He also explains the predominance of England in giving us the world's news; how this was formerly done by the fact that she controlled almost all the world's shipping, and later, when cables were laid, how she controlled them. That this is now somewhat overcome by other cables and principally, as far as the Eastern question is concerned, by our own Pacific cable. There is a great deal of truth in this point of view and is so *prima facie* true that we wonder people have not been struck by the thought before. We have been far too ready in the past to accept our world news from England, not having been intensely interested in them. Mr. Millard says that he has tried to eliminate all colorable matter from his consideration of the question, and as he has spent some years in the theater of interests in the East, he should be able to do so. By eliminating all this prejudiced matter as we know it from the Japanese and English point of view, the author gets what he calls a true starting point from which to go on with the discussion of the Far East.

He also eliminates with disdain the assumption that there is something mysterious, unfathomable to the Western intellect in the national character and motives of Japan. He

states in doing so, that he lays no claim to superior perception, but only to common sense. In this we heartily concur. For nations are nations, and their selfish natures vary not with geographic situation.

But when he comes to the causes of the war, we feel that he has made a most serious mistake, in fact, almost a blunder. He states with emphasis that we have heard much of the rights of Japan on one side and the rights of Russia on the other. He goes on to say: "As a matter of fact neither belligerent had any rights involved. Both had *interests*, but no *rights*. The chief bones of contention were Korea and Manchuria, and neither Japan nor Russia had any more rights in these countries than the United States, France, or Germany. Manchuria is a part of China, and Korea is, or was when the war began, an independent kingdom. Any rights foreign nations have are under treaties which may be modified or rescinded at any time. This distinction should be kept clear, for it is vital to any intelligent discussion of the issues of the war and their settlement."

This statement may be true as to Russia, but in our opinion it absolutely falls flat when applied to Japan. There is one law that is superior to all other law, and that is the law or right of self-preservation. No right can be so great as this, and when the necessity of its application arises all other laws, rights, or things fall. Neither is the idea of Blackstone correct, that one in danger must retreat to a stone wall before he turns and takes the life of his adversary, or at least uses the amount of force requisite to meet the conditions. Japan believed that her national existence was in peril as Russia advanced to the Pacific. That she was correct in her belief we have always most sincerely believed. And so we believe her justified in going into Korea and Manchuria to preserve her national existence. Korea and China had proved themselves most woefully incompetent to protect themselves, and the Colossus was rapidly advancing to a position where it was but a question of when the lanyard would be pulled and Japan wiped off the map. I need not wait until my adversary has his gun pointed full at my breast, and there remains nothing for him to do but press the trigger, before I exert

myself. It behooves me to draw quickly and shoot when there remains no doubt but for that action my life will be taken. And to say that Japan must wait until Korea is thoroughly Russian and Russian guns are pointing across the Straits of Korea and only the lanyards remain to be pulled, is absolute nonsense. Talk about the right of Japan in being in Korea or Manchuria or anywhere on the face of the earth as long as her life was at stake is futile. There is no difference in the right of self-preservation whether applied to individual or nations, and latitude and longitude cannot destroy this right. Japan has passed beyond the state when she can support her own population from her own territory. She is now a large manufacturing nation and the life of many millions depend upon her commerce. A blow at this commerce is a blow at the life of Japan. To protect that commerce Japan is justified in any measure where a man would be justified in defending his own life.

After Japan has repulsed the attack on her life, what her actions then are as to Korea and Manchuria is a far different question, and here we differ not so widely with the author. It is doubtful if the most weird dreamer ever expected such altruistic methods from Japan as that she would reap none of the fruits of her bloody war. We certainly did not expect it nor had anyone else any reason to expect it. But what we did expect and what we still believe, is that other nations will stand a better chance of a door ajar, if not an open one, with Japan on the inside than with Russia in that position. We believe it is true that many people are beginning to wonder if Japanese success was best for the world, but we believe it was. Of course this is only a personal belief, but it is one founded on nearly as much study of the Eastern question as is the author's belief.

We give Mr. Millard the credit of trying to secure the proper "starting point" from which to view the situation. And correctly he starts out in his endeavor to reach a solution of Japan's aims and the effect of her policy, by examining, not so much what she says as what she has done and is actually doing.

In speaking of the true position of Japan, in his second

chapter he deals with popular opinion in Japan, writing of the sentimental impulses of the people, and states as follows: "The masses of the Japanese people have no better knowledge of public and foreign affairs than do the masses of people in Russia, or than did the peasantry of Europe in the time when it spilled its blood upon battlefields in obedience to the whims of kings." Did Mr. Millard ever stop to consider the condition of the private soldier under Washington? A glance at a copy of almost any old muster roll of the Revolution will convince anyone that the soldiers of that period of our history could be classed in the category given above by the author for the Japanese.

Then he speaks of another matter which is certainly Americanism if anything ever was: "Rightly or wrongly, the average Japanese has not the slightest doubt just now of his nation's ability to whip any country in the world." If that is not the personification of American belief we will grant everything this author wishes us to believe. In fact if we believed all Mr. Millard's promises, we might think that really there is no difference between Americans and Japanese. And when it comes to grasping nations you can take your choice, and this applies not only to these two nations, but all others as well.

Regarding the chapters on China, we are about willing to admit most of the author's ideas as correct. But during the time that China is developing into a modern power, we can see no objection to Japan proclaiming a Monroe Doctrine for Asia, if she wishes to do so. Americans can consistently offer little objection to it. Not that we will not object, but it will be a selfish objection. As for the open door, of course that is for the good of Americans, else our great Secretary of State would not have done so much to secure it. But with a protective tariff at home, with worse than that as to the Chinese people, we cannot but admit that as a matter of equity we have little reason to expect the open door until we are ready to admit its policy everywhere. The truth of the matter is, any nation nowadays is always playing the dog in the manger policy, and America is no more above that than any other. So the author's contention that we are to be fear-

ful of what Japan will do in the future falls flat, for we must expect the same action on the part of any other nation that secures the dominancy of the East. And personal belief leads us to expect less of Russia than of any other.

We believe we can sum this whole matter up as follows: Could Japan have known absolutely that Korea would always be independent and that Manchuria would always remain an integral part of China, she would not have gone to war. But Manchuria was already a Russian province, and it was only a question of time until Korea would be also, unless Russia was checked. It seems in Korea Japan had to do what she has already done, and the same for Manchuria. What she will do in the future remains to be seen. Anyone's opinion, with all due respect to Mr. Millard, is a mere guess. We see no reason to think that anyone will fare any the worse with Japan in control of Asia than he would were Russia in control. And, as stated above, our individual opinion is that most of the world will fare better.

We should like to review Mr. Millard's book more fully, but have not the space. Should anyone be interested in the political questions that are to follow the solution of the war game, he will do well to read this book and consider many of the statements therein. It is well to have opposite views thrust at us to make us sure in our beliefs, or else to shake them if sense seems to trend that way. We will not recommend this book for purchase as one of the JOURNAL'S list because it is not a military work and does not deal with matters military. But to one interested in Far Eastern questions it is well worth the price, $1.50. From the press of Chas. Scribner's Sons, New York.

The following is the JOURNAL'S list of recommended books on the Russo-Japanese War:

On the Causes:

"The Russo-Japanese Conflict." (Asakawa).

On the War:

"From the Yalu to Port Arthur." (Wood).

"The War in the Far East." (The military correspondent of the *Times*).

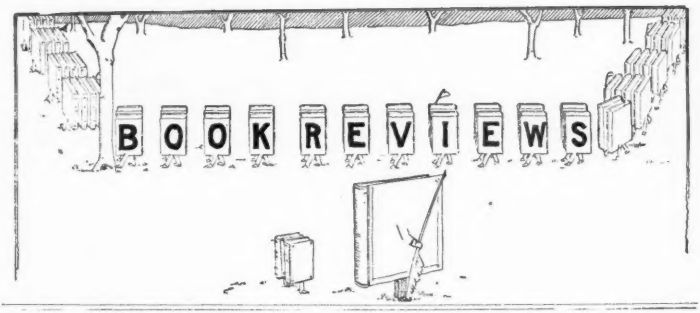
"The Battle of Mukden." (The German General Staff).

"Articles in The Outlook." (Kennan).

For comparison:

"The China-Japan War." (Vladimir).

The *Outlook* articles have not yet been published in book form. All the above have been reviewed in the JOURNAL. Asakawa's book can be purchased from Houghton, Mifflin & Co., for $2.00; Wood's and Vladimir's from The Hudson Press, Kansas City, Mo., for $1.50 each; "The War in the Far East" from E. P. Dutton & Co., New York, for $5.00; "The Battle of Mukden," from Hugh Rees, Ltd., London, England, for $1.50.



Notes on the Evolution of Infantry Tactics.

A new book by the gifted military writer, Colonel F. N. Maude, of the British service. Colonel Maude is very much in earnest and writes with an intensity of purpose that generally convinces and always holds the interest of the reader. He sees in the present tendencies a gradual unfitting of the nation for a vigorous war. The influence of the press is being felt, and the press, unfortunately, even that part which could ordinarily be expected to support the army, has been too often the victim of immature and inexperienced war correspondents who have a horror of death and the carnage of battle. Modern weapons are too deadly and human life too dear. This sentiment operating upon the people reacts upon the War Department and finds expression in tactical changes opposed to the best military requirements. Wide dispersion in the attacking line is called for in order to lessen the number of casualties. Too much attention is given to the question of cover, thus teaching the soldier to be timid instead of bold.

This is the old struggle between the close order (properly understood) and the open order advocates. But that some such influence as that referred to above has been at work can be inferred when we find the British War Office issuing

an order* that in future the British cavalry is to be taught to rely on "the rifle, not the sword." With such orders in force it would indeed be wise to turn the swords into pruning hooks.

Colonel Maude's contention is that an undue extension of the attacking line lessens the intensity of fire, delays the advance, and ultimately leads to greater loss than would be sustained by a denser line having a greater intensity of fire. This contention is sound, to say nothing of the loss of control when the men are greatly scattered, for, other things being equal, a fire superiority must be the deciding factor.

But other things are not always equal, and Colonel Maude is strong in his conviction that even more depends upon the man than upon the gun he carries or the tactics he follows. For this reason he would have the English people taught that war means carnage and death, and that battles can only be won by men who have been taught "to stand up to losses," not by those actuated by a motive to save life. That this can be done in the future as it has been in the past the Colonel has no doubt, and discipline will accomplish the desired result. By discipline is meant that quality instilled into troops which insures prompt and unhesitating obedience, a military characteristic that can only be secured by careful instruction and drill, especially close order drill, where obedience is instantaneous. The tendency now is to more or less discard close order drill and devote all the soldier's time to the more practical exercises in extended order.

Perhaps Colonel Maude sees a real danger. The pendulum may swing too far, close order, "or barrack yard" drill being neglected at a loss of discipline and control of troops.

While the book is written for the British military service, many of the conditions discussed are so similar to those confronting ourselves that one could readily believe he was reading about our own army and our own people. The tendency of the latter to belittle the military service in time of peace, and the attitude of the press, are duplicated on the other side of the Atlantic. The style is what the title would

*March 1, 1903.

indicate, a series of running comments on the evolution of infantry tactics, the comments being the outgrowth of extensive study and experience. To appreciate the book one must read it at his leisure. It is full of instructive lessons, dealing not only with tactics but with other questions affecting the efficiency of the army.

One of these, referring to the method of instructing officers and soldiers in the important duties of "security and information," seems to me of sufficient importance to call for special attention.

That our present method is not the best, I am now, from my own experience, thoroughly convinced. It is quite easy to explain the object of security and information. It is quite another thing to instruct officers and men how this object can be best attained. In our service we have been taught for years by means of diagrams or pictures how advance guards, rear guards and outposts are formed. Only models, to be sure, but, unfortunately, the model is about the only feature that remains in the student's mind, and when he is called upon to exercise his own judgment he immediately tries to reproduce the model, irrespective of the nature of the ground over which he may be operating. Nine times out of ten it can not be done, and the tenth time that particular formation may be unnecessary. Diagrams are all right where applicable, but the shadow should not be taken for the substance.

The effect of this method of instruction is very clearly exemplified in the case of officers detailed for duty at the Infantry and Cavalry School. Here they receive very little theoretical instruction in that subject, the ground having already been covered in the garrison school. Their practical work on the ground begins with advance guard exercises, and in these they will insist on flankers marching at the prescribed (model) distances, whether they be necessary or not, and expect them to keep pace with the column marching on the highway, though plowed fields, woods, fences and ravines delay their progress. Security on the march can be maintained only by a judicious use of patrols, the latter being

sent out only when necessary, returning to the column by the most convenient route when their work is accomplished, and joining their proper units at the first opportunity thereafter. There is nothing new in this. It is what is actually done in practice. Why, then, teach the student something that he must sooner or later unlearn?

Security and information should be taught the same as applied tactics where principles are evolved from a study of "situations," first on the map and afterwards on the ground with and without troops.

I now quote a paragraph from Colonel Maude's "Notes:"

"Principal amongst these was the regulation by exact prescription of a multitude of details of outpost and advance guard duties, distances between skirmishers and supports and the like, matters which can not be laid down with accuracy, because they must vary with the circumstances of each particular case, and in a well-trained army grow out of its daily practice on service; but when instruction has to be provided for hundreds of officers and thousands of men who have never seen these things and have not insensibly grown into them, as they should do, such expedients are inevitable, though they have to be paid for afterwards. The mistake lay in mixing up drill with instruction in the same book, and the evil was especially great in an army so trained to pedantic accuracy in its drill movements as the Prussians, for if the outpost instructions showed on a diagram, say fifty paces between sentries, and sentries 150 yards from their pickets, or if they laid down with diagrams, the supports 150 paces behind the skirmishers, the saving clause, according to circumstances of the ground, etc., was overlooked and these distances actually measured out for the men, however ridiculous the result."

Verily there is nothing new under the sun.

The book concludes with a plate showing rate of fire of weapons individually, number of bullets per yard delivered by normal fighting line per minute, and losses per hour at various typical infantry battles, from 1700 to 1900.

It will be surprising to many to know that while the loss per hour at Marston Moor was twelve and one-half per cent., that at Modder River was only one-half per cent. This

would seem to indicate that the modern battle will be prolonged instead of shortened, as was claimed by military writers before the late Japanese War.

D. H. BOUGHTON,
Major, Eleventh Cavalry.

Gustaf Adolf: The Father of Modern War.*

Colonel Noel has made quite a presentable book out of a pamphlet. While the work is printed so that there are some 110 pages in the book, yet it is done by means of large type and wide margins. Of course the typographical features mean much to any book, and in this case they are especially fine. But the book is really nothing more than a pamphlet.

It contains some of the leading principles of modern strategy, and shows how the Great King was the first to grasp them. Three or four maps plainly show the simplicity of Gustavus's movements in some of his more important battles. The second chapter, on old and new tactics, is interesting and instructive. But as a whole this is simply a lecture put into book form, and is hardly worth purchase unless one is a special student of tactics and strategy, or one wishes works on those subjects in his library.

Army Hand-book of Physical Training.

"The Army Hand-book of Physical Training" (Gale & Polden, Aldershot, England, price one shilling), is a handy compilation of leg exercises, physical drill with and without arms, exercises with dummy rifles, bayonet fighting, parallel bars, vaulting horse, rope climbing, bridge ladder, and dumb-bell exercises, all in accordance with the British training manuals and infantry training. It is designed to give a course covering sixty days of four hours each, embracing the exercises enumerated, and the culling of exercises from the service manuals seems to have been well

*"GUSTAF ADOLF: THE FATHER OF MODERN WAR." By Lieutenant Colonel Honorable E. Noel, late Rifle Brigade. John Bale, Sons & Danielsson, Oxford Street, London.

and judiciously performed. There is nothing new in the pamphlet except the one point of orderly and progressive arrangement of the exercises. Its worth to a company commander lies in relieving him of the necessity of abstracting our own numerous exercise manuals and in giving him a book which is easily within the understanding of his non-commissioned officers.

PAUL W. BECK,
First Lieutenant Fifth Infantry.

The Service Score Book.

"The Service Score Book" (The Service Company, Watertown, N. Y.; rifle thirty-five cents, rifle and revolver forty cents) is one of the many excellent score books on the market and seems to present no particularly new features. Its chief advantage over most such books is in the number of blank targets provided, there being sixty-four provided for 200 and 300 yard scores; sixty-four for 500 and 600; sixty-four for 800 and 1000 yard scores; sixty-four for rapid fire and sixty-four for skirmish. On this account it is probably better suited to obtaining the zeros of windage and elevation of the rifle than are the other books. Its disadvantage is that it is too large to fit the pocket conveniently.

PAUL W. BECK,
First Lieutenant, Fifth Infantry.

Company Commander's Manual.*

In the revised edition of "The Company Commander's Manual," Lieutenant Waldron has furnished the army with a very acceptable addition to the list of handbooks. This little volume is a compilation of those paragraphs of the army regulations and the various manuals of the staff departments which affect company administration, together with model forms of all of the papers to be prepared in the company orderly room.

In his work Lieutenant Waldron has been most thorough, and few points will ever arise in the paper work of the com-

*From the Franklin Hudson Press, Kansas City, Mo.

pany which cannot be cleared up in his book. It will prove of assistance to every company commander, eliminating tiresome reference for the experienced, and furnishing a compact guide for the inexperienced. Its chief value will be found in the chapterization and orderly arrangement of the paragraphs of the chapters. The model forms will save much time in the preparation of papers.

It is a book which should find place in every orderly room. M. B. STEWART.

The N—th Foot in War.*

Captain Stewart has given us a most readable little book in his clever description of the Cuban War. Though not quite up to the standard of Stephen Crane in literary merit and gore, it is a sight more interesting and humorous. It convinces us that there was a homogeneity in our old army greater than we had supposed. It is probably true that the description of the N—th foot will apply to any regiment in the army in '98. In reading it we picked out person after person most familiar to us, from the crying woman on the porch as we marched away from the old post to the crazy fool second lieutenant that was happy because war had come. The little sketch took us through the confusion of the early camps and the situation at Tampa. And from what we have heard of the times at Santiago, it is as reliable in all its descriptions, running along from the embarkation, through Siboney, the first fight, the siege and surrender, to home again. The truths of this book, expressed in the quaint, humorous style of the author, are well worth hearing again. And we are glad the book is dedicated to one who, though reaping little reward, even in glory, was yet the deserving factor of our Spanish struggle.

Dedicated to—

> The Regular, who
> Gets no glory in the War:
> Don't give a damn.
> Grins and shuts his mouth,
> Like a clam;
> Justs wants to live and die
> For Uncle Sam.

*"THE N—TH FOOT IN WAR." By Captain M. B. Stewart, Eighth Infantry. By the Hudson Publishing Company, Kansas City, Mo.

Five Years a Dragoon.*

We again wish to direct the attention of our readers to the history of our frontier in the earlier days, by the Honorable Percival G. Lowe. The readers of the JOURNAL, it is true, are familiar with this work, the greater part of it having appeared during the last two years in the pages of the JOURNAL. But the work is now in book form, and forms most interesting reading. A cavalryman is the better soldier for knowing the history of his service, and here he finds a record of a time that has left few men to tell of it. When we consider the struggles of fifty years ago, the opening up of this vast country, and the part of the army in that work, we are overcome with a feeling that if we are to be worthy successors to that sturdy race of men of half a century ago, we must bestir ourselves lest sloth and indolence overtake us, at least when compared with men of the past, told of in this history.

Mr. Lowe has done the army and the country a great service in recording the history of those times. As he states, the stories told in his volume, the scenes and incidents referred to, will never be repeated. They have become ancient history with the struggles of the Greeks in Asia and the columns of Cæsar in Gaul. Our great plains have been transformed into cultivated fields, producing food for millions. The wild herds and the savages have passed away. But the remembrance of those days and struggles will ever remain for the American people a reminder of the past, and a hope and incentive for success in the future.

With the Cossacks.†

This is the story of an adventurous Irishman who rode with the Cossacks throughout the Russo-Japanese War, and, in spite of the increasingly large number of books which have appeared dealing piecemeal with the events of the Manchurian campaign, it would have been a matter of regret had Mr. McCullagh failed to record also his experiences. The author

*"FIVE YEARS A DRAGOON." By Percival G. Lowe. By the Hudson Publishing Company, Kansas City, Mo. Price, $1.50.

†"WITH THE COSSACKS." By Francis McCullagh. London. Eveleigh Nash, 1906. Price, 7s. 6d. net.

was engaged on a newspaper in Tokyo when he decided to go to Port Arthur, obtaining there employment on the staff of the *Nova Krai*, a newspaper which came out three times a week, which was generally reported to be the organ of the Viceroy of the East, and which at the time Mr. McCullagh joined it, was contemplating the production of an English edition. The author gives a vivid account of life in Port Arthur at the time when peace and war were trembling in the balance. But it was in the service of the *New York Herald* that he was fortunate enough to be an eye witness of the naval action immediately following the outbreak of the war, occupying as he did a commanding but hazardous position in very close proximity to the Russian fleet, when quarantined on the *Columbia* in the outer roadstead of Port Arthur. Later on the author was attached to the body of Cossacks commanded by General Mischenko, and the relation of his exciting adventures with this brigade occupies the greater part of his interesting volume. Mr. McCullagh saw much of the fighting at Liao Yang; he was in the worst of the retreat after Mukden, and relates with very considerable descriptive ability the horrors of the debacle.

The author possesses the advantage of knowing thoroughly both the Russians and the Japanese, and appreciates to the full all that in the one nation has led to defeat and in the other has made for victory. Soldiers will probably find the reason for the outcome of the great struggle in the following sentence toward the end of the book: "The Russians seem to have been everlastingly preparing against attack; the Japanese to have been ever getting ready for an advance." —*From the United Service Magazine, England.*

The Real Triumph of Japan.*

Major Seaman expatiates further in this volume upon the same theme exploited by him in his former account of his experiences with the Japanese army—the success of the Japanese officials in preventing and curing disease. The reasons for this remarkable record are the

*"THE REAL TRIUMPH OF JAPAN." By Major Louis L. Seaman, M. D., LL. D. From the Appleton Press. Price, $1.50.

simple, non-irritating food of the Japanese soldier, the obedience to orders of the surgeons invariably observed, and the thorough preparation and constant vigilance of those in charge of the health of the army. Major Seaman considers this a greater victory than that won on the field of battle, and makes an earnest plea for similar measures in the American army. The points are all well made, and the book is deserving of more careful consideration than "From Tokyo through Manchuria with the Japanese," as it enlarges upon the reasons for the statements made in that readable volume.—*From The Critic, published at New Rochelle, by G. B. Putnam's Sons.*

The Siege and Fall of Port Arthur.*

Contrary to the usual run of books written by newspaper correspondents, this book impresses one with the fact that the author has a considerable knowledge of military matters.

In a preface to the book Lieutenant General Sir W. G. Nicholson (an eye witness) says: "This friendly invitation (to drink tea at his quarters at all hours, day and night), combined no doubt with the discretion and tact in his dealing with the Japanese officers, rendered Mr. Smith a *persona grata* with the investing army, and led to his being given all the facilities he desired for observing the incidents of the siege."

A very clear account is given of the preliminary operations of the Second Army and of the formation and preliminary work of the Third Army.

The author joined the Japanese before Port Arthur on April 18, 1904, with the first of the correspondents and attaches allowed to go, and remained until the end. Reading that part of the book relating to events occurring after April 18th, leaves no doubt that the author was a bona fide eye witness of what he describes. The description of the desperate assaults and the underground fighting which marked the struggle for the North Keekwan Fort is particularly good.

*"The Siege and Fall of Port Arthur." By W. Richmond Smith, correspondent of the Associated Press and Reuter's Telegram Company.

Several writers have mentioned the fear entertained by the Japanese that the men of the Osaka regiments might not acquit themselves in accordance with the high Japanese ideals, but, so far as we know, the author is the only one who has stated that he observed an instance of such defection. The Japanese method of meeting the case is interesting: "They were constituted hewers of wood and drawers of water, and as completely isolated from the rest of the army as if they were infected with some contagious disease. Late and early every day they were put through field movements and compelled to march and charge over the roughest ground and up the steepest hill slopes. A Shinto shrine was erected upon the side of a hill in rear of their camp to the departed spirit of the major who had lost his life when they had won their disgrace, and every day, by sections or by companies, the regiment was marched up to the shrine to pay homage, and listen to long dissertations upon the splendid qualities of bravery possessed by their departed comrade. Never were troops put through a more drastic or humiliating punishment. For six or eight weeks this continued, until the regiment petitioned to be sent to one of the armies operating in the northern part of the peninsula, and given another opportunity in the fighting line."

The book is full of interesting and instructive details. While a lack of sufficiently detailed maps makes it difficult to follow all the operations, it will probably be some time before a more interesting account of the siege appears.

FOX CONNER.

From the Yalu to Port Arthur.* The author, who represented *The Standard*, claims to be the only correspondent who was with General Kuroki from the Yalu to the Shaho, and that he and his interpreter were the only observers, European, American or Japanese, present at these engagements, and at the last assault upon and surrender of Port Arthur.

*"FROM THE YALU TO PORT ARTHUR." A personal record. By William Maxwell. London: Hutchinson & Co.

There is a short summary of the events that led to the war, while a new light is thrown upon some phases of the diplomatic struggle. An excellent account is given of the crossing of the Yalu by the Japanese, who displayed a genius and tenacity little less than marvelous. Before the battle began ten bridges had been constructed, their united length being over a mile and a quarter, half of them being formed from the regular pontoons of the army, while the other half was built from material found in the neighborhood.

The writer indicates that the long silence of the Japanese artillery under severe provocation helped to deceive the Russians, and thus allowed the crossing of the Yalu to be achieved with comparative rapidity and ease. In this case at least the Japanese would appear to have taken lessons from the Boers. Something like six thousand Russians, and probably more, defended the Yalu. The author is of the opinion that in the hands of half as many Boers such a position might have been defended for several days. The Russians were unskillful in selecting points of defense and in constructing earthworks, and thus left their gun positions exposed.

Referring to the effects of the Japanese common shell, the author says that the appearance of many of the slain was proof that the explosive used had terrific power. To shell fire a great proportion of the Russian losses was due, trenches and sangars affording little or no protection.

The occupation of Moutienling by the Japanese, we are told, proved that the Russians, although they had the choice of positions, whether for attack or for defense, were unskillful in maneuvering and showed a lack of determination, enterprise and initiative, the absence of which made abortive all courage and skill exhibited by the infantry and artillery.

One of the most critical days of the war for the Japanese was the 9th of October. The Japanese losses near Ponchiho had been great; important positions were forsaken, and the ammunition ran short. There was little food, and communication with the main army was difficult. The Russians adopted various ingenious devices to guard against surprise,

one of them being stretched wires and chains charged with electricity of high potentiality.

On the road to Fenhwancheng there were to be seen charred ruins of substantial homesteads. The Russians in their retreat had set fire to every building. The writer says that he saw more ruined houses in two days than he saw in a trek of six months in the Transvaal, and he wondered if the people on the continent of Europe would be as deeply agitated over these acts of war against a harmless and peaceful peasantry, as they were over the firing of farms used as "trenches" over which flew the white flag.

In an appendix will be found studies of the Russian and Japanese armies, which were issued as confidential papers before the war. We specially commend them to the attention of our military readers. There are thirty-three illustrations and three maps. Finally, the book contains much that is new and of interest, although many accounts have already appeared on the same subject.—*Broad Arrow.*



MAJOR GENERAL ADOLPHUS W. GREELY
UNITED STATES ARMY.